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A System of Employing Labor

Scheme of Operation of an Employment Bureau of Manufacturers of Racine, Wis., for the Mutual Advantage of Employer and Employee

The Manufacturers' Association of Racine, Wis., after careful trial and consideration, recently put into operation a new employment system worked out by the secretary, F. G. Bolles. It is designed to overcome certain unfavorable conditions hitherto existing and to give steady employment to the workmen who have their homes in Racine rather than to the nomadic members of the laboring element. Furthermore, it is to increase materially the average efficiency of labor, to eliminate avoidable losses from incompetence and to result in an appreciable gain to the industries of the city.

The association is composed of all of the larger manufacturers of Racine and embraces about twenty-five members. At the present time the number of operatives in the various plants is about 8000, with a total employing capacity of over 10,000. The association members require that all operatives employed shall be registered at their Free Employment Bureau, located on the principal business street. The bureau is carried on in connection with the other work of the association.

Since the new system went into effect the workman, after registering, is given a register card (Fig. 1), an envelope for it (Fig. 2), and a register card claim check, which is an aluminum coin about the size of a silver dollar, carrying the name of the employment bureau and the number of the coin. The register card gives the man's name in full, his address, classification, identification, age, nationality and register number, also instructions to employer and employee. This card has a duplicate, which goes into the alphabetical file of the employment bureau.

On the inside of the register card envelope are ten subdivisions, each of which provides for the six items of name of employer, foreman, clock or check number, employed as —, date employed and date employment ended. The register card claim check is kept by the workman to facilitate remembering his register number and is presented when calling for the register card at the bureau. With this he is prepared to make application at one of the plants where he wishes to work.

When employment is obtained by a workman, the register card and envelope are surrendered by him, and, after the insertion of the name of the employer, name of foreman, clock or check number, how employed and date employed, they are returned to the Free Employment Bureau on the same day. There they are placed on file in a numerical arrangement and remain until the workman leaves his place or is dismissed.

With termination of a man's service a dismissal slip is filled out by the foreman and sent by the employer to the Bureau. This dismissal slip, Fig. 3, shows, in addition to the full name and address, clock number and register number of the employee, a rating of his skill, productive ability and conduct, as well as the reason for leaving. The slip is dated on the reverse side, on which the name of the employer is also printed.

On receipt of the dismissal slip the record envelope described below is taken from the file of the company sending in the dismissal. The register card and envelope, which have been in the numerically arranged file during the operative's period of employment, are removed, and the production value of the man is noted in the space used for the employer from whom the dismissal comes.

Thus, if the operative is excellent in skill, production and conduct, his marking for production value would be, say, 111, and if he has been laid off because of no work these figures would be followed by reason 11.

The dismissal date is inserted and the register card and envelope are returned to the numerical file. The dismissal slip is put into the record envelope, which is now transferred to the unemployed file. The record envelope is similar to the envelope for the register card, indicated in Fig. 2, but the flap folds over once in covering the envelope pocket. That is, the envelope pocket is about 3 x 5 in. and the envelope with the flap extended is about 6 x 5 in. The outside of the envelope contains spaces for noting the register number, the man's name and the occupation for which he is registered, besides numbers for general classification. The outside of the flap has spaces for noting when the man's name has been

Register No.	
FAMILY NAME	
GIVEN NAMES	
RESIDING AT	
REGISTERED AS	
IDENTIFICATION	NATIONALITY

This card is of no value except to person named. It is given to assist in correctly recording names and addresses.

Manufacturers' Free Employment Bureau
531 Wisconsin Street, Racine, Wis.

Notice to Workman. This card must be given to Timekeeper when going to work. It will be returned to you by calling at the Free Employment Bureau after leaving the employ of the company to which it is given. **Remember the number on this card.**

Notice to Employer. Record name and address as above. Be sure you spell it correctly. Take up this card when a workman enters your employ and send to Manufacturers' Free Employment Bureau, 531 Wisconsin St. by evening mail same day man is employed.

Form 5-1525-12-50 Copyrighted Dec. 1911 by F. G. Bolles, Racine, Wis.

Fig. 1—One Side of the Register Card Perforated for Division Into Two Portions, each 4 3/4 In. Wide and 3 In. High. The Other Portion is Shown in Fig. 2; Light Bristol Board, White with Black and Red Type.

Key to Identification

Lack of space on the Registration Cards of employees makes it impossible to add a description of the man to whom it was issued without abbreviating same. We have therefore devised the following means of identification.

Persons charged with the employment of men at factories will kindly check up this identification in every case as far as possible, to prevent the transfer of a card by a registered workman to one who is not registered.

HAIR	EYES	Married-W
1. Black	1. Black	Single - Y
2. Brown	2. Brown	
3. Red	3. Blue	
4. Light	4. Gray	
5. Grey		

Height is shown by figures, indicating feet and inches run together; thus 510=five feet, ten inches. Weight is given in figures.

EXAMPLE OF IDENTIFICATION

3458178W

3 means red hair.
4 - grey eyes.
50 - 5' 0" tall.
178 - 178 pounds.
W - Married man.

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Fig. 4—Key to Identification of Operative. Light green card, 3 x 5 1/4 in.

personal reasons which may be alleged by a workman or to be surmised from his record for detrimental rating.

As the records accumulate the industrious men are coming more and more to appreciate the great value that the system offers. They need only to present their card at a factory, and if positions are open for which they are qualified they are put to work at once. There is no time lost in asking a man questions and no doubt as to his ability to fill such a place as that indicated by his card. Neither need there be any trial period to determine the hourly rate of a man, for his competency has been established by his previous record.

To employers the advantages of such a system are self-evident. There is everywhere, during normal times, difficulty in securing thoroughly competent skilled workmen; and among machinists, for example, the really experienced, desirable men are often pressed to one side by three, six or nine months' journeymen of a roving disposition who push themselves to the front. This condition is chargeable with a heavy loss due to general incompetency, spoiled work and non-productive machines with their constant addition to the shop burden. A further loss, which has also to be borne by the manufacturer, and is sometimes the heaviest of all, is imperfect product delivered. Still another difficulty is imperfect classification.

Universal Vise and Surface Table

Two recent products of the Victor Vise Company, 15 West Washington street, Springfield, Ohio, are a universal vise and a surface table. The vise which is illustrated in Fig. 1 is capable of handling both irregular and standard shapes of work, and can be easily and quickly adjusted to suit the convenience of the operator, while the surface table, which is intended to be used as an accessory to the vise, is shown in Fig. 2.

In using the vise the work can be put in the proper position for getting the maximum amount of light on the lines or prick-punch marks of the lay-out easily, since the position of the vise can be changed as often as may be necessary.

In all positions the vise is held rigidly by a single clamping lever, and the tool is automatically maintained in the vertical position by the action of a locking collar on the stem until the clamping lever is tightened. When the clamping lever is tightened all the parts of the vise are rigidly clamped together to form one piece. It is emphasized that there is no mutilation of the bench in attaching this device, and as it extends out from the bench the workman is afforded better access to his work. Four different styles and four sizes of these vises are made.

The surface table, which is illustrated in Fig. 2, is a handy accessory to the vise, and can be used for various purposes. If desired it can be used in the base as illustrated or may be detached from the stem and used on the bench as an ordinary surface plate. Various sizes of tables are made to meet the requirements of the user.

The Studebaker Corporation, South Bend, Ind., celebrated its sixtieth birthday February 11.

This form must be properly filled out by those calling for their "Register Cards." Manufacturers' Ass'n. of Racine.

LAST SHOP NO. _____ REGISTER NO. _____

NAME _____

RESIDENCE NO. _____ ST. _____

Name of Last Employer _____

Kind of work at last place _____

Form 1-10-1-12

Fig. 5—Form Filled by Operative on Securing His Register Card. Light blue paper, 3 x 4 3/4 in.

Where these losses can be eliminated and operatives properly graded according to the kind of work they are most capable of performing, it means not only a greater wage-earning power for the really skilled, steady worker,

Form 12-10-1-12

MANUFACTURERS ASS'N OF RACINE

EMPLOYMENT RECORD

DATE		COMPANY			
Check No.	Register No.	Check No.	Register No.	Check No.	Register No.

Fig. 6—Blank for Employment Record. Light blue paper made in duplicate, 5 1/4 x 8 3/4 in. A similarly ruled blank of yellow paper, also provided in duplicate, is used for keeping a report of dismissals.

but very material gains in the productive capacity and operating economy of the industrial plants affected.

C. T.

The Permanent Manufacturers' Exhibit of Railway Supplies and Equipment has been established with offices in the Karpen Building, Michigan Boulevard, Chicago. It is the intention of this organization to provide a permanent show place for machinery equipment and supplies necessary to the modern railroad system. It is also the inten-

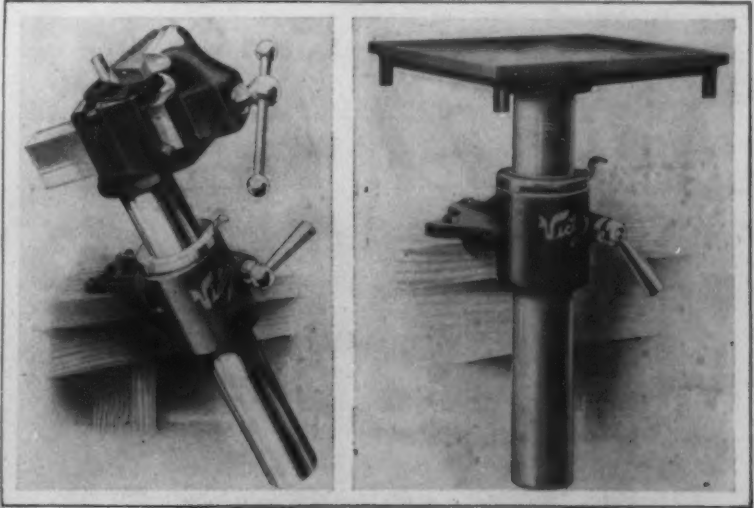


Fig. 1—A Universal Vise Fig. 2—A Surface Table
Two Recent Products of the Victor Vise Company, Springfield, Ohio

tion to make this exhibit headquarters for railroad men and their meetings, and provisions therefore have been made.

Arizona's admission to the Union February 14 brings within the sisterhood of States the last bit of territory within the confines of the continental United States. There are now 48 States.

Steel Siphons for New York's Water Supply

Supports, Tests and Coatings of the Pipe Line Portions of the New Water Supply Work for the Metropolis

In connection with the gigantic water supply development now for some time actively under way for Greater New York is included what is known as the Catskill aqueduct, and where this crosses narrow valleys, steel pipe lines are employed connecting water tunnels in solid rock. Some of the interesting points with regard to the steel tubes have to do with the seating of the large piping on supporting saddles; the arrangement in advance of use for the water load on the saddles with allowance for the deformation of the pipe cross-section owing to the pressure of the water, and the coating both inside and out of the steel work.

Three parallel tubes are required for each valley crossing in order to furnish full capacity. Only one is being put in at present, the middle one. There are to be in all, fourteen steel siphon crossings of an average length of 0.455 mile. The single central tubes will total altogether something over six miles of steel pipe. The diameters are 9.50, 9.75 and 11.25 ft. The thickness of the steel plates varies from 0.438 to 0.750 in. Circular joints are lap riveted with alternate large and small rings or sections of tube as indicated in an accompanying illustration. With the thinnest plates the longitudinal seams are also lap riveted. For plates thicker than 0.500 in. the longitudinal seams are butt riveted.

The steel pipe is furnished in 15-ft. lengths. A circular joint has accordingly to be made every 15 ft. Concrete

cradles are arranged at intervals to allow the shop and field joints to come between them. The concrete cradles at one crossing at least, are 8 ft. or more across, measured transversely to the line of the aqueduct, and about 3 ft. wide. A typical cradle has a curved depression to fit the pipe. Two bulkheads of the required form are placed on the earth excavation, which has been given the required curvature. The bulkheads are held temporarily in position



Section of Siphon of $\frac{1}{2}$ -in. Metal, 11 ft. 3 in. in Diameter

by two wooden strips nailed across. The concrete is poured in and the upper surface formed by hand. Transverse and several longitudinal grooves are desired where the cradle and pipe are to come into contact. These are provided by using short lengths of wooden strips. The object of these depressions will appear later.

When the cradles have been cast, the pipe suitably placed, and the field joints made, the entire siphon is filled with water, the pressure being brought to the conditions that are to exist when the aqueduct is in actual service. This is done not merely to test for possible leaks, but especially to give the pipe the exact form it will have when in actual use. While filled thus with water, the concrete envelope is put on. This is a proceeding requiring time. During this period it is important that the pressure be maintained at the required point. It is necessary, therefore, not merely to pump the pipe full, but to maintain the pressure night and day. In this and other duties Cameron pumps are used.

A jacket of concrete completely envelops the tube, except where the



Siphon Showing Arch Ribs and Lagging of Forms for Concrete Covering of the Pipe

cradles themselves are located. Prior to placing the concrete of the envelope, a grout is poured into the grooves arranged on the upper surface of the cradles to effect a close joint beneath the steel plate. The placing of the interior shell of cement mortar is one of the most interesting matters connected with the work. This lining is required to have a minimum thickness of 2 in. and a smooth internal surface when finished. A device for blowing the grout on the steel and thus building up to the required thickness was tried for a while. It seemed to put the mortar on satisfactorily, except that it left a rough surface expensive to smooth. On one of the two contracts, that of the T. A. Gillespie Company, wooden forms are used. The bottom of the lining is put in by hand. The remainder, about 270 deg., is placed at a single pouring when a section of the form, perhaps 20 ft. long, is ready. This consists of nine segments, each covering about 30 deg. Metal stops are employed to regulate the distance between form and pipe. The pouring is accomplished from a tube running up through the roof, thus allowing the cement mortar to be furnished from an outside point. The tube is arranged at one end of the form. The end selected is the lower one. A hole is left open at the other end to provide a suitable vent.

Efficiency in the Pattern Shop

Points on Shop Management from the Viewpoint of the Foreman

Some specific examples of motion study and general observations on the problem of efficient shop operations were contributed recently to the Philadelphia Foundry Foremen's Association by James Whitehead, president of the association. They related chiefly to the pattern shop, and one case mentioned had to do with making foundry flasks.

The flasks are dovetailed, and it was the custom in getting out the lumber for the flasks to allow $\frac{3}{4}$ in. to project through the sides after being put together, then to trim them flush on the band saw. At one time Mr. Whitehead had an order for about 250 flasks. He figured that each flask had eight times $\frac{3}{4}$ in. to be cut away, and multiplying this by 250 he found that he was about to lose 104 ft. of lumber on the one order alone. Besides they had to make eight cuts on the band saw to each flask, which consumed about 3 min. per flask; this, multiplied by 250, amounts to 12 $\frac{1}{2}$ hr. steady work, not to mention extra sharpening of saws and probably breakage. A conservative estimate was a loss of about 5 per cent. of time and 100 ft. of lumber on the job. When he pointed this out to the men they tried to tell him that this was the best way to do the job and had been the practice. He turned to the most intelligent of the men and talked it over with him, told him to work from the outside of his flask and cut exactly to size and follow his directions precisely and that he would assume responsibility for their correctness. The result was successful, but since then the men were found falling back to their old ways. They were then told that if this was repeated their places would be filled with men who would follow instructions.

Another instance was this: One of Mr. Whitehead's pattern makers was making a pattern which was curved in two directions. Having cut one curve on the hand saw he proceeded to cut the other away with his bench tools, because it had always been done that way. He was shown that by saving the block from his first cut and tacking it temporarily in its original position he could turn the piece on end and cut the other curve and save a great deal of time. Several times Mr. Whitehead has had to

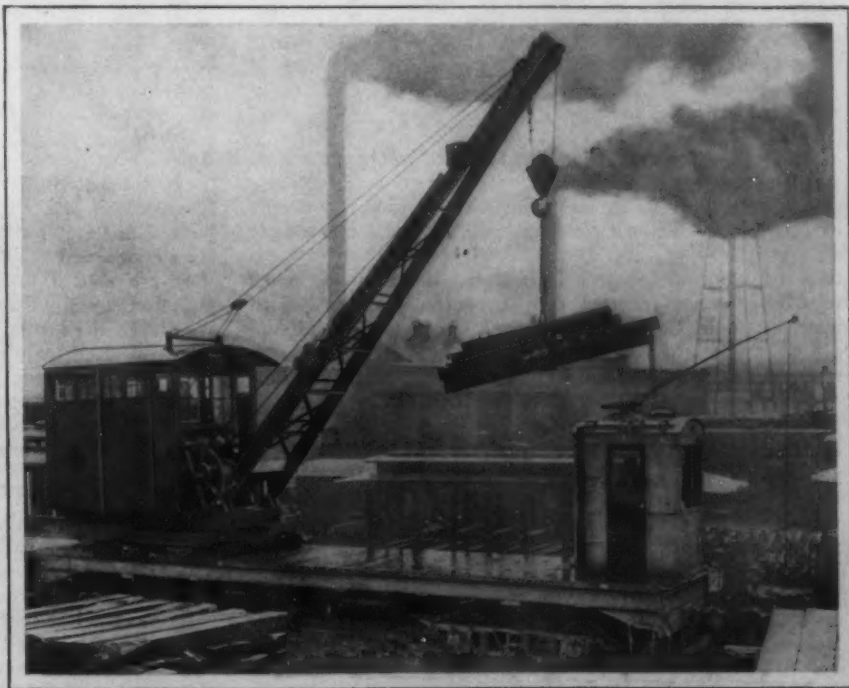
break up old-fashioned methods of doing work by pointing out new and better ways, and this is no easy task where men have been long employed in one place.

While acting as assistant foreman in a large jobbing foundry the author was called in the absence of the foreman to estimate on an outside job, and when the order was taken the foreman said it could not be done in the time Mr. Whitehead had estimated by the fastest men in the shop. He had to show what could be done by going on the bench himself. The job consisted in wood bench work and wood turning, brass molding and then brass lathe work and finally bench work and gating, and with the eyes of 40 men on him he managed to do the job on time, doing everything but the molding. Had he not been able to make good he would have lost, he said, his hold on the men.

A foreman should study the individual ability of his men, he continued, and try to arrange his work so that each man will get the kind of work to which he is best adapted. This can best be done when the foreman gets the work long enough before he has to put it in the shop so that he may study methods as well as the man for the job. Even when a job is but a repetition of something which has been done many times before the foreman should ever think there might be a better way and not pass it over without some thought.

New Electric Crane

For use by traction companies in construction and maintenance work the Browning Engineering Company, Cleveland, Ohio, has recently brought out a new type of electric crane. One of these, which was completed a short time ago for the Northern Ohio Traction & Light Company, will be used in the construction of a large dam which is to be built in connection with a hydroelectric plant for the company at Cuyahoga Falls. In addition to this work, which is the handling of bulk material such as sand, crushed stone and gravel, this crane can also be employed for handling coal and cinders in power houses economically, for handling rails, ties, etc., and also for doing the heavy lifting incident to the repair of cars at shops and terminals and it will undoubtedly be employed for these purposes by the purchaser as well as for working on the dam.



A New Type of Electric Crane Built by the Browning Engineering Company, Cleveland, Ohio

The crane is mounted on a special eight-wheel work car truck which is equipped with a motor for traveling and a 75-hp. one for hoisting, rotating and slewing the crane, although as a general thing one motor will be used for performing all four operations. These are controlled from the crane cab, but there is a controller for the traveling motor

MECHANICAL & CIVIL ENGINEERS.
PITTSBURGH, PA.

only at the opposite end of the car. The power for these motors is taken either from an overhead trolley or the third rail.

The equipment of the crane includes a 30-ft. steel channel boom which can swing in a complete circle and double drums. It also has a clamshell bucket fitted with steel

shoes and having a capacity of $1\frac{1}{2}$ cu. yd. The hook block can be quickly detached and the bucket substituted when desired. The capacity of the crane is 10 tons at a radius of from 10 to 12 ft., and in handling light loads the boom can be lowered so that it will swing beneath overhead trolley wires.

American and European Wages and Efficiency

A Machinery Manufacturer's Observations on a Recent Trip Around the World—Germany the Most Formidable Competitor, Though with Advancing Wages

BY WILLIAM L. SAUNDERS.

[Mr. Saunders, who is president of the Ingersoll-Rand Company, New York, returned to this country February 14 after a five-months' journey around the world. Following the meeting of the American Institute of Mining Engineers in San Francisco last fall, a number of the members, including Mr. Saunders, went to Japan. He and some others of the party decided to continue traveling eastward. They entered Korea, then crossed Siberia to Europe. Mr. Saunders visited a number of countries, including France, Germany, Austria-Hungary and England. His views are of particular interest in the pendency of the Underwood bill putting machine tools on the free list.—EDITOR.]

Any one who travels for the first time over new fields with his mind free and his interest centered upon business conditions in manufacturing is a very poor judge of things; but a man who goes over beaten tracks from time to time with the same ends in view and with experiences to steer him should be competent to draw comparisons and to reach conclusions with some degree of accuracy and value.

The manufacturing world is not large and that part of it which makes machinery is a comparatively limited field. The land of this world is more largely given up to agriculture than to any other purpose. Farming does not concentrate population or build up large cities. The products of the soil are greater in value than anything else that is produced, not only because the people are fed, but through the income derived from nature's products. Railroads are mostly made possible and profitable through agricultural conditions. The same may be said of shipping and of a great many other forms of business which add to the wealth and prosperity of the people. But next in importance to agriculture in every country is the development of its manufactures.

Manufacturing Centers Not Built on Cheap Labor

In looking for causes which have produced great manufacturing centers two things stand out prominently: favorable natural conditions and markets. A plentiful supply of crude labor is not a condition of such great importance as is popularly supposed, because where there is an abundance of labor and where it is cheap the best and most productive manufacturing does not exist. Take, for instance, India, China and Japan. All have a plentiful supply of cheap and intelligent labor, which through proper training might be made to produce iron and steel products, for example, equal to the English, American and German products. Yet no such results have been derived, and the reason usually given is lack of capital. It is not the true reason, because if it were true that to cut labor in two would save money and add to profits in any line capital would flow in that direction. Capital for manufacturing usually concentrates itself as near as possible to the markets where each particular product is consumed; and the very fact that it does so concentrate itself means so great an enlargement of these markets through increased population and prosperity that new fields are not sought.

Efficient Labor the Basis of Success

In mechanical things, at least, skilled labor is the essential basis of success in manufacture. The first and largest item on the cost sheet is the item of labor, and the maker who thinks that because this is true he should turn to a country where labor is cheap will surely court disaster. Efficiency of labor and the best tools are the requisites to supremacy in any line. Efficient labor comes through the work of a life time and cannot be made in a day. It is

furthermore plain to those with the world's experience before them that just in proportion as labor becomes more efficient and as tools become more productive does the price of labor go up, and this is the chief thought which has impressed me during a recent trip around the world.

England was up to recent years in advance of any other country in mechanical manufacturing. The United States with higher labor and Germany with lower labor have both made considerable headway against her. In the case of the United States the headway has not been made because labor was higher, but in spite of it and because of other conditions which have compensated for higher labor. In Germany the progress has not been because of lower labor, but through the spirit of her people, coupled with good engineering and business energy and push, equal to that of the United States—if not greater.

Higher British and German Labor Costs

It is worthy of notice that while the price of mechanical labor in the United States has stood comparatively still, or has had but a moderate advance during, say, the last 20 years, the price of similar labor in Germany and England has increased at least 100 per cent. Mechanical labor in Germany, which is today one-half that of the United States, was but one-quarter 20 years ago.

It is usual to attribute this to the growing strength of labor unions, and it must not be forgotten that labor unions have added materially to the strength of labor in the countries mentioned. But labor unions are only strong where they are able to exercise at least some control over the situation, by limiting the supply, by legislation or otherwise. In a country like Japan, for instance, labor is so plentiful, both male and female, that the efforts of unions to control are made hopeless. A manufacturer there who might be disposed to rebel against labor union requirements would draw from the large outside field and cultivate new men rather than submit.

Japan's Low Priced and Inefficient Labor

In such large plants as the Imperial Steel Works of Japan mechanical labor costs about 30 cents a day for men and 15 cents for women. Women in Japan in many cases replace the men, except where heavy work is required. In a copper smelter in Japan I saw a young girl handling the levers by which the transportation cars were shifted. For this she received 10 cents per day. The man who lifted the metal from the car was receiving 20 cents per day. Yet it is a fact that notwithstanding these astonishingly favorable conditions, so far as labor is concerned, the Imperial Steel Works, for instance, do not pay, though the product is equal to that produced anywhere else. One naturally looks for a reason for this, because the steel works are located at tidewater and transportation in ships is not expensive. The conclusion is inevitable that this labor per unit is of very low efficiency and that it cannot

be made efficient except through long years of experience and with markets sufficient to warrant a large product in each form of finished material. Here we come to the revelation of the true reason of American progress in these lines. Our markets are so close and so fruitful that the single high-priced man working on a single thing each day gets the labor unit of cost down and this fact has enabled American manufacturers to compete in foreign fields.

We must not, however, lose sight of the gradual and pronounced increase in the cost of labor in foreign manufacturing countries. Should Japan, for instance, ever reach prominence in her steel manufacturing we may rest assured that at that time her labor prices will be increased several hundred per cent.

Germany a Competitor to Be Feared

Japan is not a manufacturing country and is not likely to be within the life time of those who may be interested in this subject. So the practical question to consider is, which country is it that threatens English and American supremacy; and in considering this let us look into the reasons. The answer is plainly, Germany. The Germans are natural mechanics. They are intelligent, resourceful and they work like beavers. Their intelligence is initiative and inventive. They are inventive not only to the extent of originating things, but they have the greater faculty, from the commercial standpoint, of taking advantage of things which may have originated elsewhere, improving them, perfecting them and making the best possible use of them.

There is nothing altruistic or sentimental about the German manufacturer. He goes for the thing that is best and he studies the best and cheapest way to produce it. The German mechanical engineer is equal if not superior to any one working in the same field. He is a student of detail. He takes nothing for granted; he finds out what has been done elsewhere, how far it goes, and he studiously and on practical lines seeks ways and means by which to go one step further. Take the steam engine, for instance, which we are accustomed to look upon as an American product. It was invented in England, but the invention of anything mechanical is only the first step toward success. Watt, Newcomen, Corliss and others carried the engine through successive steps of higher efficiency until we in America practically laid down on the Corliss, thinking we had reached the limit of efficiency for the reciprocating type of machine. The Germans did not stop; and it is a fact which can hardly be disputed that today the reciprocating engine has reached a higher stage in Germany than anywhere else in the world. Through the use of poppet valves, steam heating and by greater attention to details the Germans are offering and proving by tests reciprocating engines at an efficiency of about two pounds of steam per i.h.p. better than American or English manufacturers. I do not refer to the Diesel and other special types of reciprocating engines, but to the regular steam engine, which, notwithstanding the turbine and other means of producing horsepower from steam, still holds its place in the largest field and with the highest efficiency under general conditions of service.

German Wages and Efficiency Both Rising

The steam engine is only used to illustrate the point, which is that German growth, which might almost be said to be supremacy in certain mechanical fields, is not due alone to German cheap labor. At the present time German labor is cheaper, but it is going up faster than the labor of England or America and its unit of efficiency grows in the same proportion as the price increases. German manufacturers are located under favorable conditions for material and markets; they have plenty of iron, coal and limestone at their doors, and large shipping, with markets extending throughout Europe, Asia and South America. The product is on a large scale in those lines where experience has been extensive, and they have the brains, the push and the money to reach other and even competitive countries.

Tariff Application

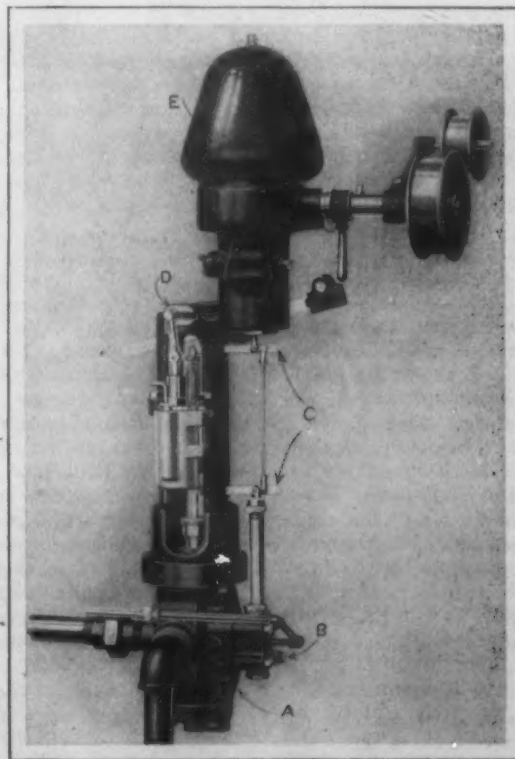
This brings us to the all-important question of tariff. The American tariff has heretofore been prohibitive. Shall we now take down the bars and admit German products, which will surely come? Are American manufacturers in

mechanical lines ready to meet this competition on practically equal terms? Have they had time enough to prepare for it and is it their fault if they are not ready?

In the first place, every fair man will acknowledge that if we are to remove mountains we should begin on grains of sand and that whether we are protectionists or free traders a condition exists and has existed for a large period of years which has materially aided the building up of American industries. That condition is one of high protection. All plans have been made under it. The wheels of our works have been tuned to it and the avenues are paved for it; so that whether we are ready or not no concern should be put to the test of a sudden and radical change in well-established conditions of business. Time should be given to prepare for the assaults of a business enemy, and justice in this line can only be done by taking down the bars one at a time, with sufficient time in between to safeguard the property of the people and to maintain the stability of our industrial conditions. True protection is that which protects those industries only that require it and without providing the opportunity for monopoly abuses.

A New Water Wheel Governor

A line of oil pressure governors has been brought out by the Woodward Governor Company, Rockford, Ill., for application to water wheels. The relay valve A, shown in the illustration, controls the admission of oil to the working cylinder. The other parts of the valve mechanism are a small pilot valve, B, for controlling the relay valve and a floating lever, C, connecting the two valves with the speed governor. The pilot valve is small and, meeting little friction, is calculated to make it respond readily to the slightest movement of the speed governor. A com-



The Controlling Mechanism of an Improved Type of Waterwheel Governor Operated by Oil Pressure Built by the Woodward Governor Company, Rockford, Ill.

pensating or anti-racing mechanism is an essential feature of the governor. Simple but ample means of adjustment are provided to secure the close regulation required by the local conditions in each separate installation. These adjustments which cover a wide range can be made while the governor is in operation by manipulating the crank D until the proper amount of compensation is obtained. The speed governor is of the maker's standard type and is completely inclosed in an oil-tight case, E. If desired the governor can be provided with an electric motor for regulating the speed of the water wheel from a distance.

What Constitutes a Machine Tool?

A Résumé of Customs Court Decisions Which Leave the Question in a Very Indefinite Status—A Conflict Over Hand and Power Drive

With a view to throwing as much light as possible on the mooted question, "What is a machine tool?" a synopsis is given herewith of several decisions by the United States General Appraisers and the United States Court of Customs Appeals on the claims of importers that certain imported machinery could be classified as machine tools. Some of the questions raised under Paragraph 197 of the Tariff Act of 1909, which provides for the admission of "machine tools" under a 30 per cent. ad valorem duty, are easily solvable; some are more difficult, and many others cause great divergence of opinion, the finest points being raised. It is apparent that there is need of an accepted definition of the term.

The point of hand or power operation is one that has been raised, and on this there is a difference of opinion, both lay and judicial. Judge Martin of the United States Court of Customs Appeals has held that "machine tool" is a term which "certainly always connotes the application of some kind of power * * * other than hand power," whereas General Appraiser Fischer has held that "a machine which actuates a tool for the purpose of cutting metal, wood or stone, is machine tool, whether it is hand or power driven mechanism." And this is but one of the points on which opinions vary.

As matters stand, "tools," "machines" and "machine tools" are considered by the unit and a vast amount of disagreement results. Fred A. Geier of Cincinnati, in his argument before the Finance Committee of the United States Senate, opposing the placing of machine tools on the free list, referred to the question several times, and it was evident that the interest of the members of the committee in the subject was keenly aroused. With the issue sharply drawn by the proposal to abolish all duty on this class of machinery the definition becomes of new importance.

A Claim for the Shaft of a Ball Mill

The customs officials have little that will definitely guide them, and a vast amount of labor and responsibility has been put upon their shoulders by the efforts of the importers of various devices and manufactures to have these classified as machine tools, instead of manufactures of metal "not specially provided for." A duty of 45 per cent. ad valorem is levied upon the latter, or one-half more than on machine tools. As an unusual instance of the broad scope of the questions which confront the United States General Appraisers, it may be said that they now have before them a protest made by representatives of Friedrich Krupp, Essen, Germany, who have been importing parts of ball mills into this country. The main shaft of a ball mill has been held dutiable by the collector at 45 per cent. ad valorem as a manufacture of metal, but protest is made that it should be classified as "mill shafting" and come in at a much lower rate. Mill shafting is dutiable as a per lb. rate, varying in accordance with the value, the maximum being between 20 and 30 per cent.

Floor planing machines, hand operated machine shears, barking or rossing machines, combined jogging and punching machines, rolling mills, slitting machines, scale removing machines and straightening machines have been officially pronounced to be "machine tools."

Steel hair clippers, machine cutters for textiles, meat slicing machines, machine parts for beet-shredding and other machines, silk polishing machines, kitchen utensils and lathe chucks have been officially declared not to be "machine tools."

The Myers Case

A case which was taken to the United States Court of Customs Appeals and therefore is much referred to in discussions of the "machine tool" question is that of F. W. Myers & Co. They oppose the assessment of duty by the Collector of Customs at Plattsburg, N. Y., on floor planing

machines, which the collector held to be dutiable at 45 per cent. ad valorem, as "manufactures in chief value of metal, not specially provided for." Hearing was had before Board 2, Fischer & Howell, General Appraisers, and their opinion, June 2, 1910, written by General Appraiser Fischer, held that "a portable apparatus used to scrape or plane hard wood floors is not within the meaning of the term machine tools * * * the words so used being restricted to such machines as are workshop appliances," and that the contention of the importer that a duty of 30 per cent. should be assessed was not valid. Appeal was taken to the United States Court of Customs Appeals and the decision of the lower court was reversed. In the words of the higher court, it was stated that "floor planers, with an electric motor for the attached planes, resembling lawn mowers, but portable and when in use propelled by hand, are machine tools and dutiable under Paragraph 197, Tariff Act of 1909." After quoting various literary authorities, the court opinion as delivered by Presiding Judge Montgomery says:

"The conclusion seems to be irresistible that the articles here under consideration are machine tools. They are implements used by the hand of one man and are easily portable. It is just as essential to good workmanship that the tool be constantly attended by the operator, moved back and forth on the floor to be planed, by the hand of one man and given intelligent direction. The machine itself does not accomplish the result. The intervention of a single hand or workman is essential to its operation. The power and principle applied are the things that make it partake of the character of machinery. It still remains a tool within the definitions given by lexicographers. * * * We think, however, that within common understanding this implement is a tool to which power has been applied and comes within proper definition of a machine tool. The holding of the board which sustained the classification made by the Collector is reversed."

Judge Hunt, specially concurring, said he had been somewhat reluctant to agree with the conclusion reached, but he had decided that it "is probably a fairer interpretation of the statute than one which would regard the floor planer as a machine." He concluded: "It is impossible to draw an exact line of demarkation between machine tools and machinery, but with the general rules stated in the opinion of the court I agree."

Steel Hair Clippers

Another ruling which has been much quoted also, because of adjudication upon it by the United States Court of Customs Appeals, is that in the case of Sears, Roebuck & Co. against the imposition of duty at 45 per cent. on steel hair clippers such as are used by barbers. The claim was made that they are machine tools and as such entitled to entry at 30 per cent. ad valorem. The local board decided that such implements were not machine tools, and their opinion was sustained by the Court of Customs Appeals. The higher court, after quoting many authorities, in an opinion delivered by Judge Martin holds: "It appears * * * that it is rather doubtful whether the term 'machine tool' may be properly applied to such tools as are used in cutting hair. The terms seem rather to apply to such tools only as are used in mechanical work dealing with wood, metal or stone. But, however that may be, the terms certainly always connote the application of some kind of power to an implement or tool for its use and operation other than hand power alone."

Machine Shears

Under date of February 10, 1912, a decision written by General Appraiser Fischer was rendered in which it was held that machine shears for cutting metal, metal bars or metal plates are machine tools, despite the fact that they are hand-driven. In part the decision says: "In

this machine the lower cutting edge is firmly fixed to the lower frame, and the upper cutter is affixed to a movable jaw, which is operated by the cutting lever working through and by means of a gearing arrangement. These machines are metal-working appliances and are, we believe, strictly machine tools. Similar machines of a type which are power-driven were classified as 'machine tools,' while those operated by hand lever were excluded from such classification. We are of the opinion that this is an error. The only limitation of such implements is if they are hand 'tools' as opposed to power 'tools' the distinction is one which should be applied to 'tools' rather than to 'machines.' A machine which actuates a tool for the purpose of cutting metal, wood or stone, is a machine tool, whether it is hand or power driven mechanism. A tool, however, would have to be a power tool as distinguished from a hand tool to be classed within the articles covered by the meaning of the term 'machine tool.'

Machine Cutters for Textiles

A decision, under date of February 10, 1912, passing on the question of the classification of pinking or sample-cutting machines, which were assessed on entry at 45 per cent. ad valorem, is based on the precedent established in the Sears, Roebuck & Co. case (relating to steel hair clippers), wherein the court said: "It appears * * * rather doubtful whether the term 'machine tool' may be properly applied to such tools as are used in cutting hair or performing like services. The term seems rather to apply to such tools only as are used in mechanical work dealing with wood, metal or stone." The opinion of the Board of Appraisers, written by General Appraiser Fischer, in the matter of pinking and sample cutting machines, concludes: "The implements here in question are for cutting paper, felt and textile fabrics; they are not designed for mechanical work dealing with wood, metal or stone, and are to be thus distinguished from machine tools. The protests are overruled and the decision of the Collector in each case is hereby affirmed."

Barking or Rosing Machines

A decision involving the classification of machines for removing the bark from pulp wood will be recalled as printed in *The Iron Age* of February 1, page 331. The decision was handed down by General Appraiser Fischer on January 22, 1912. The claim of the Collector in the endeavor to assess duty at 45 per cent. was that the term "machine tools" is used in trade to refer only to such machine tools as are used in the working of metal. Appraiser Fischer's decision held: "The term 'machine tools' as used in Paragraph 107, Tariff Act of 1909, has no definite general and uniform meaning in trade and commerce limiting it to metal working machines;" also "barking or rosing machines * * * being power-driven appliances for working on wood with cutting tools, are dutiable as machine tools under Paragraph 107."

Combined Jogging and Punching Machines

In a brief decision dated December 29, 1911, General Appraiser Fischer says of a hydraulic bending, punching and shearing apparatus that "the claim that this machine is a machine tool is well founded."

Meat Slicing Machines

In passing upon meat slicing machines of a type used in butcher shops and restaurants General Appraiser Fischer ruled that they clearly were not machine tools, basing his conclusion on the ruling in the Sears, Roebuck & Co. case. The meat slicing machine in question consisted of a moving platform on which the meat is secured by means of a clamp, and when a hand wheel is turned the meat moves forward to a revolving circular knife which cuts the meat rapidly and to the required thickness. The decision is dated December 22, 1911.

Machine Parts Used in Beet Shredding Machines

These articles are described as "highly tempered steel file wheels and beet knives or shredders." In a decision rendered July 13, 1911, General Appraiser Fischer overruled the protest of the importer and declared the parts could not be considered machine tools. He thereon confirmed the assessment of duty at 45 per cent. ad valorem.

Silk Polishing Machines

In a decision handed down June 5, 1911, General Appraiser Fischer says: "The merchandise here in question is invoiced either as a silk polishing machine or as a rolling on frame with wooden traverses, as the case may be. Both types are machines in use in silk mills. Duty was assessed thereon at the rate of 45 per cent. ad valorem * * * as manufactures of metal not specially provided for, and the merchandise claimed dutiable properly at 30 per cent. ad valorem * * * as machine tools."

"As we view the reasons expressed in the ruling of the United States Court of Customs Appeals, in *Myers v. United States* (T. D. 31250) in holding floor-planing machines to be machine tools, we are of the opinion that these articles we have here before us are 'machines' and not 'tools.' A line has to be drawn somewhere, and if these articles are to be considered machine tools, that term would likewise embrace the looms and other weaving apparatus. The protests are overruled, and the decisions of the Collector (port of New York) affirmed."

Kitchen Utensils

The article in this case, which had been assessed at 45 per cent. by the collector at the port of New York, is used for cutting vegetables and called the "lightning mincer." It is of metal with a wire handle and four to seven circular blades. The claim was made by the importer that the articles were "machine tools" and subject to the duty imposed upon machine tools. General Appraiser Fischer in a decision of March 13, 1911, said: "The article is in fact a cutting implement for kitchen purposes, and whether it is or is not within the broad construction that may be given to the term 'tool,' it in no way partakes of the character of power tools and cannot properly be classed as a machine tool."

Chucks

In a decision of February 24, 1911, General Appraiser Fischer ruled that metal chucks are not machine tools. In part the decision reads: "It does not appear clear from the testimony offered that these metal chucks were a part of and belonged to lathes also a part of the shipment here in question. The appraiser reports as follows: 'The merchandise in question consists of chucks for watchmakers' lathes. They are parts of machine tools and not machine tools.' The metal chucks considered by themselves we certainly do not regard as tools, nor as machine tools. A chuck is an appendage to a lathe * * *"

Rolling Mill Machinery

Under date of December 5, 1910, in deciding a protest by the American Steel & Wire Company and others, General Appraiser Fischer said: "The machines * * * are invoiced as cold rolling mills, slitting machines, scale removing machines, straightening machines, etc. We find from the testimony offered that these articles are workshop appliances used in metal working, and we hold machines of this description such as perform the work of tools to be, in fact, machine tools."

In a case, however, where the importation consisted merely of "clutch springs and cast steel rolls" the appraiser ruled that they could not be considered as machine tools.

Tie Plate Hand Book.—The Interstate Iron & Steel Company, First National Bank Building, Chicago, Ill., has issued a pamphlet which shows a few of the different types of Common Sense rolled tie plates, which it is furnishing to the leading railroad companies of the country. The various styles include rib and lug plates, rib plates both with and without shoulders and plain shoulder plates. These plates are supplied in widths of 8, 8½ and 9 in. in the usual lengths, and can be punched as desired. Any of the sections illustrated can be furnished either in rolled wrought iron or rolled steel to conform to the specifications of the purchaser.

The Cincinnati office of the Wheeler Condenser & Engineering Company, Carteret, N. J., has been moved from 111 Ingalls Building to the Mercantile Library Building. The office will be in charge of Richard L. Strobridge who was formerly connected with the Boston office of the company.

The Wigglesworth Boring Mill

Novel Constructional Details of a Recent Product of the Western Machine Tool Works for Heavy Boring, Drilling and Tapping

A new boring mill, especially adapted for the heaviest kinds of boring, drilling and tapping, has been recently built by the Western Machine Tool Works, Holland, Mich., and is being marketed by Hill, Clarke & Co. of Chicago, who are the sales agents for this company's machines. The new tool, which is known as the Wigglesworth boring machine, is capable of handling 4-in. drills in steel and of pulling an 8-in. pipe tap in cast iron. One of the especially interesting features of the tool is the construction of the column. As will be noticed from the views of the machine, the cross sectional area of this part increases from the top downward. This has been done because, as the head is raised, the bending stresses at the base of the column are increased, thus necessitating a greater cross sectional area at the base of the column than is required further up. Views of the machine from the driving side, the end and the operating side are given in Figs. 1, 2 and 3 respectively, while the remaining engravings show details of the various mechanisms. Fig. 4 illustrates the details of the quick change speed gear box, while details of the spindle drive are given in Fig. 5. Figs. 6 and 7 are a front and an end view respectively of the positive geared feed mechanism.

The general features of the new machine can be seen in Figs. 1, 2 and 3, and it will be noticed that the spindle remains in a fixed position while the head mechanism is fed down automatically on the column. Nine changes of geared positive and independent feeds, ranging from 0.006 to 0.032 in. per revolution of the spindle are available, and three positive geared leads for tapping 8, 11½ and 14 threads per inch can be obtained by additional change gears which are furnished as an extra. These tapping leads are independent of the nine feed changes. A belted connection is made on this machine between the countershaft on the base and the quick change speed gear box on the top of the column. The countershaft carries tight and loose pulleys 16 in. in diameter and 5 in. wide and runs at a constant speed of 400 r.p.m. In the speed change gear box eight different spindle speeds are obtained and these are doubled in the head by the back gears, thus giving 16 changes ranging from 25 to 400 r.p.m. in all.

From the gear box the power is transmitted to the head proper through a set of three bevel gears and a friction clutch which form the reverse mechanism for tapping. The lever D for operating this friction clutch is

conveniently located on the left side of the head, as is shown in Fig. 1. In the head the spindle is driven by a large gear located in a fixed position adjacent to the work at the lower end of the spindle. It is pointed out that this arrangement reduces the torsional strain on the spindle and stiffens this part, thus reducing the chatter usually present when heavy cuts are being taken. The automatic down

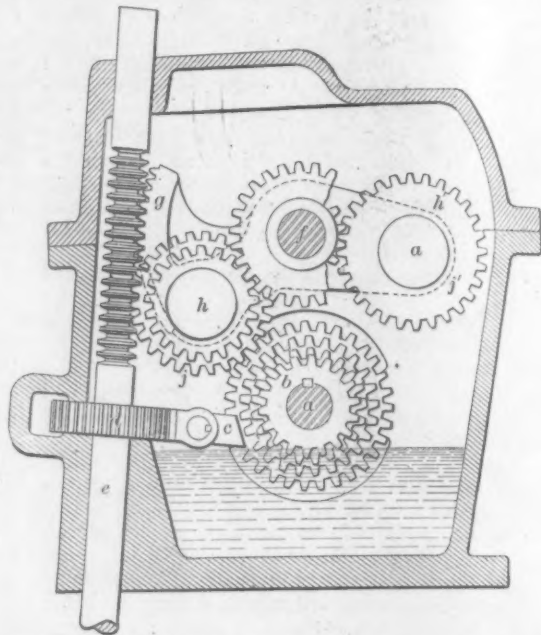


Fig. 4—Details of the Quick Change Speed Gear Box

feed to the head on the column is driven from the spiral gear located near the upper end of the spindle, as shown in Fig. 5. From this point it goes through the quick change feed gear to a spur gear which meshes with a rack cut in the face of the column. This arrangement makes it necessary to have the feed operate strictly in connection with the spindle movement, and it will be noticed in addition that the spindle does not move down through the head, but this entire part moves down, carrying the spindle with it.

The Quick Change Speed Gear Box

Fig. 4 shows the construction of the quick change gear box placed on the top of the column, which governs the spindle speeds. A constant speed shaft, *a*, is keyed to

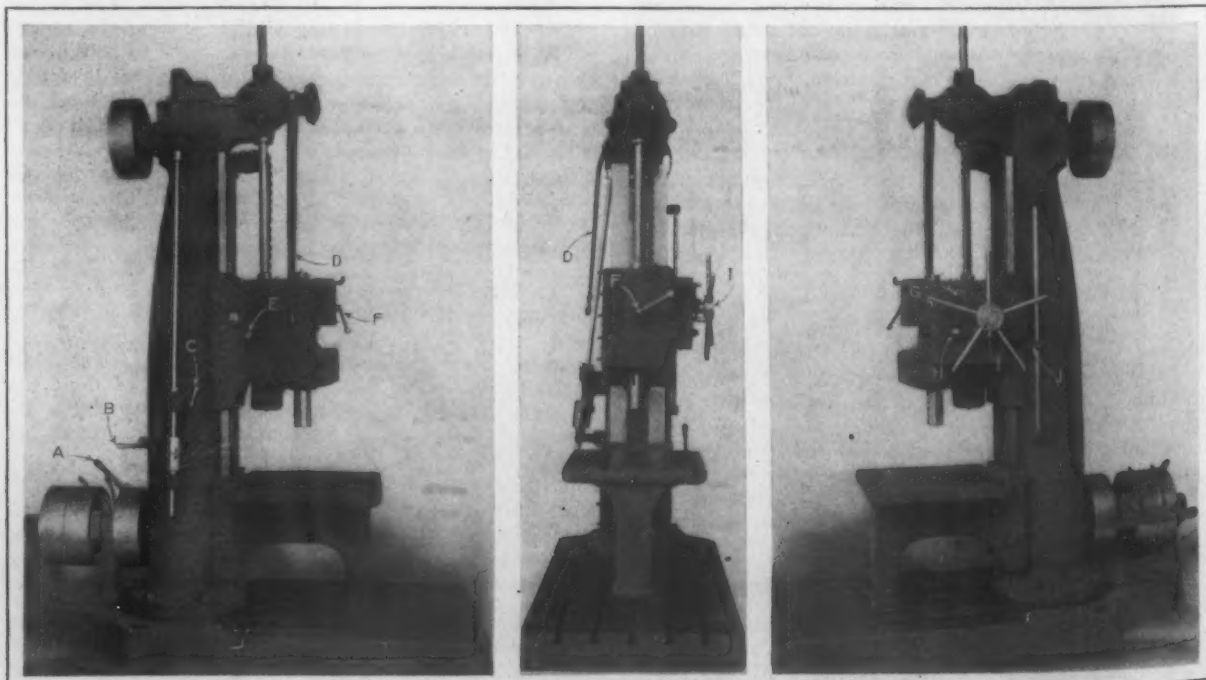


Fig. 1—Driving Side

Fig. 2—End View

Fig. 3—Operating Side

Three Views of the Wigglesworth Boring Mill Built by the Western Machine Tool Works, Holland, Mich.

the pulley, which in turn is belted to the countershaft. A cone of four gears is splined to this shaft and can be shifted thereon by the fork *c*, which slides on a fixed stud in the gear casing. A straight rack is secured to the gear

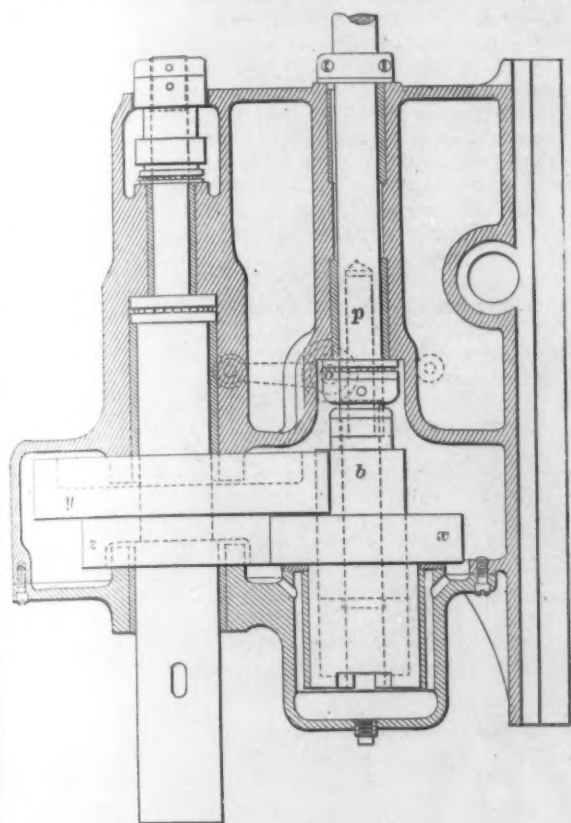


Fig. 5—Details of the Spindle Drive

d, which is keyed to the vertical shaft *e*, so that the rotation of the latter shifts the cone of gears *b*. The shaft to which this variable speed is transmitted is shown at *f*, and upon it is mounted the rocker arm *g*, having two pivots, *h* and *h'*, supporting two sets of intermediate gears *j* and *j'*. The latter are directly geared to the pinion shaft *f*, while *j* is connected by compound gearing, as shown. On the upper part of the rod *e* is cut a circular rack, the teeth of which engage the corresponding gear teeth in the sector face of the rocker arm *g*. The rod *e* can be raised or lowered and rotated either to the right or to the left. Raising or lowering the rod rocks the arm *g* and permits either *j* or *j'* to mesh with the corresponding gear on the shaft *a*, while rotating the rod to the right or to the left shifts the cone *b* on the shaft *a* to bring any one of the four gears into position to engage *j* or *j'*.

As can be seen in Fig. 1, a drum is mounted on the lower end of the rod *e*, and the raising or lowering or rotating of this drum is accomplished by manipulating the two levers *B* and *C* at the side of the column. Eight changes of spindle speed are thus provided by a simple mechanism, and it is pointed out that all possibility of interference or false moves has been done away with.

The spindle drive is clearly brought out in Fig. 5, which shows the direct geared drive and the back geared

drive. It will be noticed from this drawing that the shaft *k* which is driven from the gear box on the top of the column carries the gears *b* and *x* while the spindle proper carries the mating gears *y* and *z*. The gear *b* is splined to the shaft, and when in the position shown provides a back geared drive to the spindle. When it is desired to change to a direct geared drive this gear can be dropped down inside the gear *x*, which has been bored out to receive it by shifting the lever *E*, Fig. 1. The gear *x*, Fig. 5, has a large hub on the lower side, and on the inside of this hub a two-jaw clutch is cut. Engagement is made with this two-jaw clutch by a corresponding clutch cut on the hub of the gear *b*. In this way when the clutch is engaged the gear *b* no longer meshes with the gear *y*, and the drive is direct from *x* to *z*. The spindle, which is of forged high carbon steel, is $3\frac{1}{2}$ in. in diameter, and is fitted with ball thrust bearings. The gears *y* and *z* mentioned above are keyed to this spindle, the former being of steel 12 in. in diameter with a $2\frac{1}{2}$ -in. face and having a diametral pitch of 4.

Positive Geared Feed Mechanism

In Figs. 6 and 7 the details of the positive geared feed mechanism are clearly shown. It will be noticed that the power is taken from the spindle by a spiral gear on the shaft *c*, Fig. 6, and is transmitted from here through the three spur gears in the small box on the front of the shaft *d*. The gears in this box are changed for obtaining the different tapping leads, and in changing from one lead to another it is simply necessary to take off one gear and substitute another. The shaft *d* carries five gears, all of which run loosely upon it except the one *x*, which is keyed solidly to the shaft. The two gears to the left are locked solidly together, any any one of these middle gears can in turn be keyed to the shaft by a dive key mechanism. The gear *y* runs loose upon the shaft, while the gear *z* of the head, which is designated as *g*, Fig. 3.

Above these three middle gears is a cone of mating gears running loose upon the shaft *e*, Fig. 6, all of which are joined together. The shaft *f* carries three gears, the one to the extreme right being keyed solid to the shaft. The gear *y* runs loose upon the shaft, while the gear *z* has a positive clutch formed to the hub and is splined to the shaft. The gear *z* drives the shaft *f* from the gear *x* when tapping is being done, while the drive is from *x* to *y* when the regular spindle feeds are desired. From the shaft

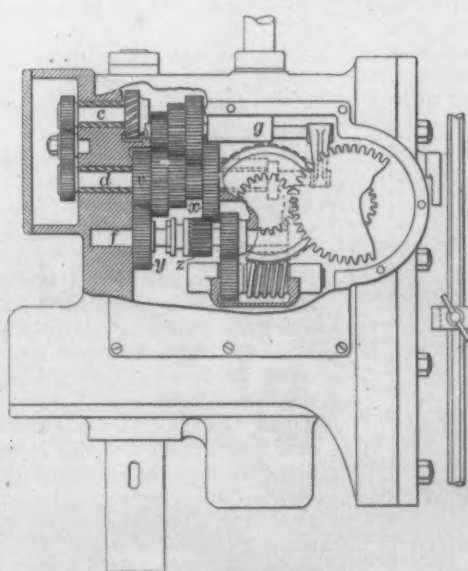


Fig. 6--Front View

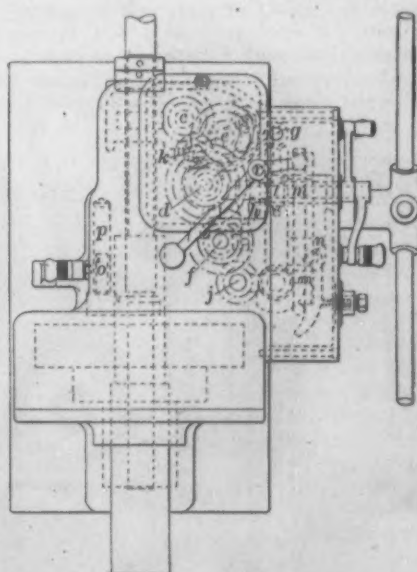


Fig. 7--End View

Views Showing Details of the Positive Geared Feed Mechanism

f the drive goes to the worm gear by the spur gear on the shaft *j*, Fig. 7. The worm is hung in a segment pivoted around this shaft so that it can be raised into mesh with the worm wheel by moving the lever *P*, Fig. 1, on the front of the head. When the worm is brought into mesh a spring presses a finger under the worm bracket and holds it securely in position. From the worm wheel the speed is transmitted through the three spur gears shown in Fig. 6 to a rack secured to the face of the column, which causes

the head to be raised or lowered automatically. An adjustable automatic stop on the side of the column, which is shown in Fig. 3, is provided for tripping the down feed of the head.

As has been stated, the machine is especially adapted for tapping, and the tap may be fed down with a geared positive lead, reversed and fed out positively by manipulating the long lever *D*, Fig. 1, on the left of the machine. This arrangement, it is pointed out, obviates the trouble of the tap dragging and roughing up the thread. It will be noticed in Fig. 5 that the spindle derives its motion from a low hung drive; that is, the motion is imparted to the spindle by a gear placed adjacent to its lower end and near the work. As the head moves downward the driving gear remains at a fixed distance from the tool, while the head itself moves down upon the column and carries the spindle with it.

On the under side of the table below the spindle center a hub is bored out and is heavily ribbed on its outer edges. When a boring operation, such as an open end cylinder job, is to be performed all that is necessary is to drill and bore out a hole through the table into this hub and insert a bushing. The boring bar can be run through and inserted in this bearing, an arrangement which gives a support to both ends of the boring bar. The cutter will feed down through the work with an accuracy of alignment and freedom from spring and chatter which, it is claimed, cannot be obtained in any other way.

Three positive geared leads for tapping 8, 11½ and 14 threads per inch are furnished, as well as nine geared positive and independent feeds to the spindle, ranging from 0.006 to 0.042 in. per revolution of the spindle. The automatic down feed to the head on the column is 40 in., the distance from the column face to the center of the spindle is 14½ in., the depth of the column from the front to the back is 18 in. and the size of the base is 40 x 90 in. The weight of the machine is about 8,500 lb. If it is desired to employ motor drive for this machine the only change necessary is to place a motor on the base back of the column where the countershaft is shown in the accompanying engravings.

New 26-In. Sliding Head Drill

The Barnes Drill Company, Rockford, Ill., has added to its line of all-geared drills a new 26-in. machine having the same general features and design but arranged with a

sliding head. In common with the other geared drills, all cone and inherent belts have been eliminated. The special features of this new drill are a lessening in the amount of floor space required, ease and speed of manipulation and an increase in the amount of power developed.

The drill has eight geared speed changes and the same number of feed changes, all of which can be easily controlled from the front of the machine. The amounts of the latter are shown in plain figures and range from 0.005 to 0.086 in. The spindle is very large and is double splined. The sleeve has a travel of 14 in. and the drift wheel is mounted below the sleeve. Both the head and the spindle are counterbalanced, the weight being suspended on a chain which passes over a roller bearing sheave wheel. The head is gibbed to a column face in such a way as to insure perfect alignment, and is held in any point in its travel by two quick-acting clamp screws. The raising and lowering of the head is accomplished by a crank pinion meshing with a rack, an arrangement which it is emphasized is especially desirable for boring bar and deep hole work. The necessary speeds have been provided for boring bar work, and the machine will bore a hole 8 in. in diameter or larger. In addition to this class of work the drill is also adapted for cylinder boring and heavy drilling. The machine is guaranteed to drive a 2-in. high speed twist drill at a feed of 0.041 in. per revolution of the spindle or at the rate of 6½ in. per minute in cast iron without the back gears. In tests a 1-in. high speed twist drill has been driven at the rate of 13½ in. per minute in cast iron. This figure in some cases was the limit of endurance of the drill used.

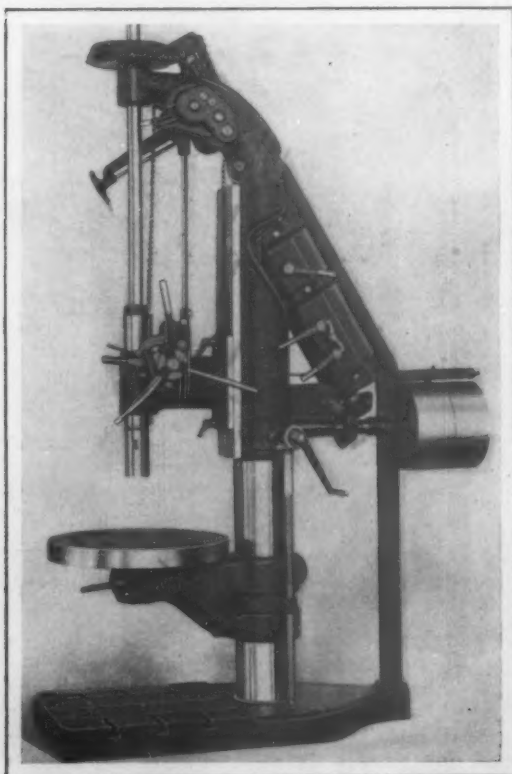
The following table gives the principal dimensions and specifications of the tool:

Height of drill, in.....	92½
Distance from column face and table center, in.....	12
Distance between turned column and table center, in....	13½
Diameter of column, in.....	7½
Diameter of table, in.....	23
Diameter of spindle, in.....	1 15/16
Diameter of spindle nose, in.....	3 3/32
Morse taper of spindle.....	No. 4
Width of column face, in.....	7
Vertical travel of table, in.....	20
Vertical travel of spindle, in.....	14
Travel of sliding head, in.....	23
Maximum distance between spindle and base, in.....	54
Minimum distance between spindle and base, in.....	18½
Maximum distance from spindle to table, in.....	20
Diameter of crown gear, in.....	10 7/16
Diameter of bevel pinion, in.....	7
Ratio of back gearing.....	4 to 1
Speed of tight and loose pulleys, r.p.m.....	325
Floor space, in.....	22 x 49
Net weight, lb.....	1,734

In the accompanying engraving the drill is shown equipped with a belt drive, but if desired motor drive can be substituted. In this case the motor is mounted upon a bracket bolted to the vertical portion of the back brace and a small pinion on the motor armature shaft meshes with a large gear which takes the place of the tight and loose pulleys.

The Triumph Electric and Ice Machine companies, Oakley, Cincinnati, Ohio, have published the first number of a new house organ entitled the Triumph Chronicle. The leading article discusses some advantages of variable-speed motor drive and is illustrated by a partial view of the Electric Company's main erecting shop, in which a number of motors are shown in various stages of assembling. The other side is not overlooked, an illustrated description of the refrigerating plant at the new Business Men's Club, Cincinnati, being given. A number of the products of the two companies are shown on the advertising pages with appropriate references to the printed matter describing them.

Advertising and Selling, 71 West Twenty-third street, New York City, has issued a supplement of paper samples which is a handsome book with a three-color embossed cover containing samples of cover, book, bond, blotting and other papers appropriately printed. This book contains samples of paper made by some of the leading manufacturers in this country. It is intended for manufacturers in general and advertising men in particular, and gives ideas as to how printed matter, catalogues, booklets, folders, etc., can be effectively prepared.



A New 26-In. Sliding Head Geared Drill Built by the Barnes Drill Company, Rockford, Ill.

Cutting-Off Machine Attachments

Two Recently Developed Devices of the Espen-Lucas Machine Works

With a view to obtaining with a single-blade cold saw cutting-off machine the same rapidity of production on crankshaft work that is possible with machines of the double saw blade type, the Espen-Lucas Machine Works, Philadelphia, Pa., has designed two attachments for use in connection with its rapid production single-blade machine, which was illustrated in *The Iron Age* January 11,

work. After the work has been clamped in position the operation of the entire sliding bed can be controlled by the ratchet on either section.

The screw clamps for holding the work are either of the ordinary type operated by steel wheel heads fitting over the screws or by a special pneumatic clamp, which is shown in Fig. 2. The latter type is adapted for use on any style of table. It is made of heavy steel castings, and the operation is through a taper plunger actuated by air pressure in a cylinder in the clamp, a four-way valve serving for the admission and release of the air, which is operated at about 70-lb. pressure. The rollers on both

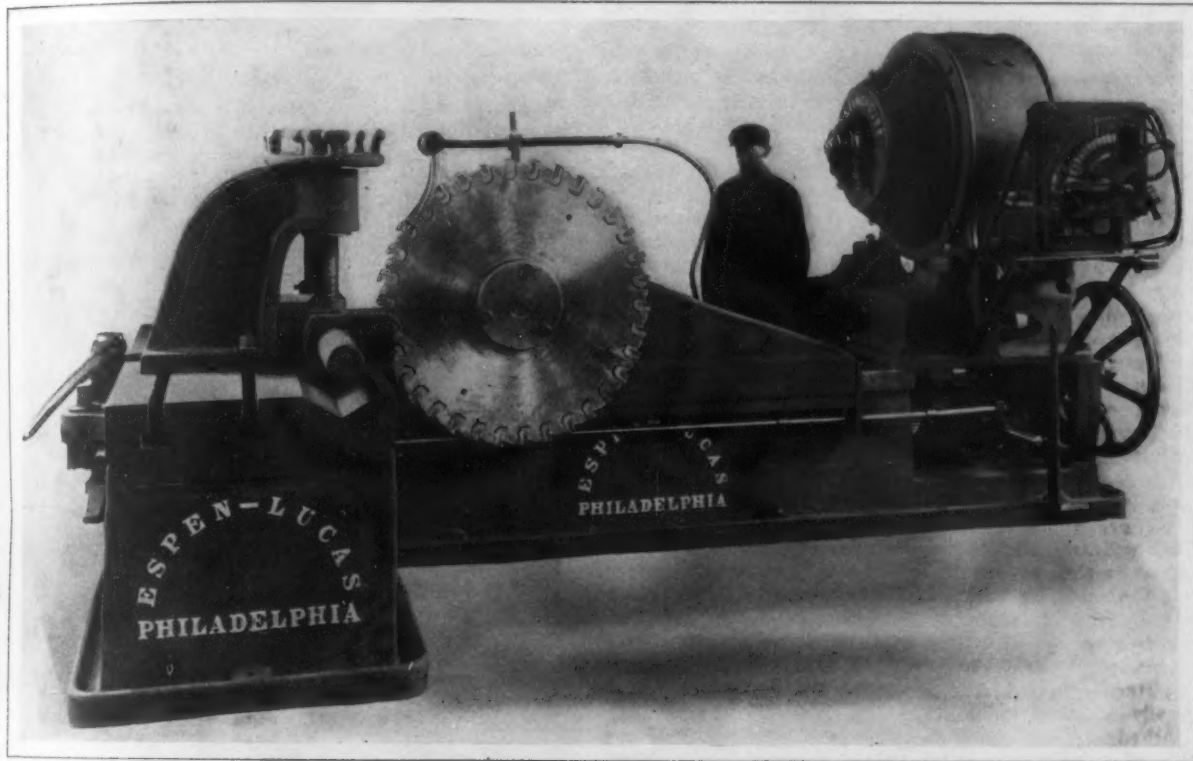


Fig. 1—A Single-Blade Cold Saw Cutting-Off Machine Equipped with a Special Table for Rapid Shifting of the Work Developed by the Espen-Lucas Machine Works, Philadelphia, Pa.

1912. These two devices are a table of special design for rapidly shifting the work, which is illustrated in Fig. 1 and the special type of pneumatic clamp shown in Fig. 2.

The special advantage of the employment of this new table is that the restriction in the drive of a double-blade machine, which is limited by the driving capacity of the outside blade and also by the side spring of this part, has been overcome. In Fig. 1 the standard rapid production cold saw machine is shown with a 42-in. saw blade and an 8x3 ft. table, although any desired size can be furnished. This table has a sectional slide top made in two parts, each of which is operated by a separate rack and pinion device controlled by a steel hand ratchet lever. These tables can be adjusted to the size of work to be sawed, both T and V slots being provided to hold the

the fixed and movable arms of the clamps are of hardened steel. In operation the screw is brought down lightly upon the work and the clamp is then operated and the work held in position through the admission of the air.

The Vulcan Engineering Sales Company

The Vulcan Engineering Sales Company has been organized with offices in the Fisher Building, Chicago, and at 30 Church street, New York City. The company will control and sell the entire output of the Hanna Engineering Works, Chicago; Mumford Molding Machine Company, Plainfield, N. J., and Quincy-Manchester-Sargent Company, New York. In addition to the plants of these several companies now in operation, arrangements are being made for new factory capacity to provide for an extension of the company's product into new lines of special railroad tools and equipment. The officers of the Vulcan Engineering Sales Company are: H. K. Gilbert, president, and P. W. Gates, secretary and treasurer. Mr. Gilbert was formerly vice-president of the Buda Company, Harvey, Ill., and Mr. Gates is president of the Hanna Engineering Works. E. H. Mumford, vice-president and general manager of the Mumford Molding Machine Company, will continue in charge of manufacturing operations in that department.

The Canton Mfg. Company, Canton, Ohio, has begun active work on doubling the capacity of its plant, which has been made necessary by the demand for its products. These consist of patented ventilators, fireproof doors and windows and sheet metal products generally, such as metal porch columns, coal chutes, steel awnings, cornices and cresting. The company makes a specialty of the Multiplex filing cabinet, the manufacture of which it recently began.

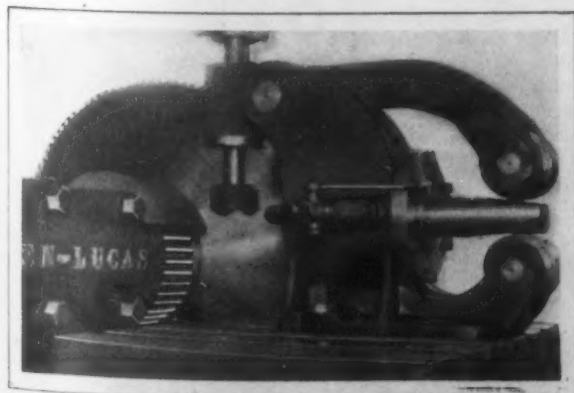


Fig. 2—The Pneumatic Clamp Designed for Use in Conjunction with the Table

New Champion Tools

Four recent additions to the line of tools built by the Champion Blower & Forge Company, Lancaster, Pa., are a combination automatic self-feed and compound lever-feed electrically-driven upright drill, a power hammer, an iron and steel shear and a steel punch. Figs. 1 and 2 show the drill and the hammer, while the two remaining tools are illustrated in Fig. 3, the shear being at the left of the engraving.

The special advantage claimed for the drill illustrated in Fig. 1 is that the double compound lever-feed with which it is supplied results in a marked increase in the size of the holes it is possible to drill, while this feed combined with the automatic self-feed it is claimed results in the production of three times as much work in the same time. This increase is secured by augmenting the lever pressure and raising the drill bit out of a hole as soon as it is bored and replacing it on the material in position to bore the next hole almost instantaneously. Both of these feeds, it is emphasized, are always ready for work, since the change from one to the other can be made in an exceptionally short time. The motor employed for driving the drill is attached directly to the upright back geared shaft, with the result that no power is lost in transmission. If the electric current should be interrupted at any time it is possible to operate this drill by hand by simply attaching a crank and withdrawing a sliding key. The changes in the speed of the spindle are secured by sliding the speed changing gear in or out of engagement. The end thrust of the drill spindle is taken up by ball bearings. The table is raised and lowered by a rack, and if desired can be swung back out of the way. The tool will drill to the center of a 21-in. circle and the spindle has a vertical travel of 5½ in. and two speeds. The maximum size of holes bored is 1 in. in diameter.

The frame and the anvil of the power hammer shown in Fig. 2 are cast in one piece without a core, an arrangement which it is pointed out insures perfect alignment of the guides and a solid anvil, which gives the rigidity and solidity necessary for the reception of severe and rapid blows. As will be noticed from the accompanying engraving, the position of the guides is such that there is practically no limit to the length of the bar which can be worked, and as the hammer is a double-sided tool, it can be used as well from one side as the other. This construction enables it to be placed between two fires and operated from either one by the double treadle shown on the base.

The control of the hammer enables the force of the blow to be varied at the will of the operator from a gentle stroke to a rapid succession of heavy blows that will weld 2¼ and 3 in. axles in one heat. If desired the operator can strike one blow and stop with the hammer on the up stroke.

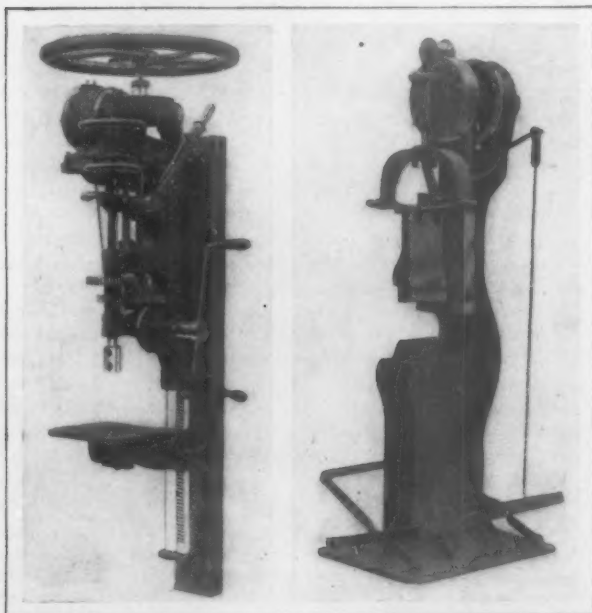


Fig. 1—Combination Drill

Fig. 2—Power Hammer

Two of the New Tools Developed by the Champion Blower & Forge Company, Lancaster, Pa.

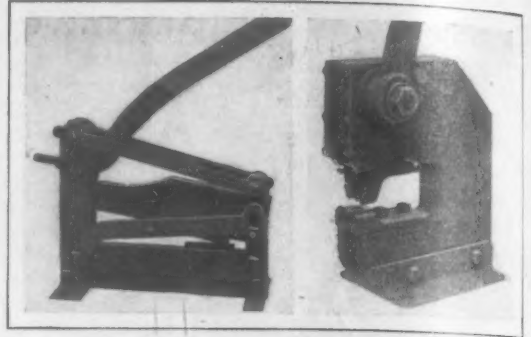


Fig. 3—The Wrought Iron and Steel Shears and a Steel Punch, Also Two Recently Developed Tools

The hammer head and the ram stand out from the main portion of the frame, which is an advantage, since they are not covered up to obscure the work from the operator, and at the same time in forging irons with an angle in them it is possible to work close to the corner. The height of the frame enables a tire 3 ft. in diameter to be welded, and the hammer will weld a tire 4 in. wide and 1 in. thick or a light buggy tire easily. The dies furnished with the hammer are hardened cast steel, the regular ones being of the flat top type and measuring 2½x6 in. It has a fine plain surface, measuring 2½x3 in., and two plain grooves and one tapering groove across one end for forging straight and tapering round iron. If desired any ordinary shape of dies can be substituted for the regular ones without any extra cost.

The following table gives the principal dimensions and specifications of the hammer:

Over-all height, in.	58
Weight of ram, lb.	65
Size of dies, in.	2½ x 6½
Width of driving belt, in.	2½
Speed, r. p. m.	300
Floor space, in.	20 x 27
Weight, lb.	1,250

The wrought iron and steel shear shown at the left of Fig. 2 is made of wrought iron and steel throughout, no cast-iron or malleable castings being used. This tool is provided with a 6-in. knife, ¾ in. thick, and will cut flat bar stock measuring 4x½ in. and 1-in. round or square bars. If desired, another size of shear having knives 12 in. long and ½ in. thick can be furnished, which in addition to cutting flat, round and square stock of the dimensions given above, will also cut plow steel from 6 to 10 in. wide.

The steel punch shown at the right of Fig. 2 is built entirely of steel, the frame being a single piece of plate and the working parts steel forgings. The punches are fastened by a key and the machine is furnished with removable die holders so that they can be easily taken out. Two sizes of punch are built, one having a capacity of 5/16-in. holes in ¾-in. material, while the other will punch ¾-in. holes in ¾-in. material. The throat depths of these two punches are 2¾ and 6 5/16 in., respectively, and the weights are 30 and 210 lb.

The Lackawanna Steel Company's Year

The income account of the Lackawanna Steel Company and its subsidiaries for the year ended December 31, 1911, compares as follows with the previous year:

	1911.	1910.
Net income	\$3,035,042	\$5,949,236
Interest on bonds and notes.....	\$1,750,000	\$1,729,229
Sinking fund and exhaustion fund.....	260,056	432,378
Depreciation, etc.	942,183	1,254,523
Surplus	\$82,803	\$2,533,106

The unfilled orders December 31, 1911, were 289,971 tons, against 226,103 tons December 31, 1910.

The Toledo Furnace Company, Toledo, Ohio, is considering the installation of a coking plant with 100 ovens in connection with its two blast furnaces. It is negotiating with the city for the vacation of a street in order to carry out its plans.

The National Eight Hour Bill

True Meaning of This Proposed Legislation

BY J. M. MANLEY*

House bill No. 9061, commonly referred to as the eight hour bill, passed the lower House of Congress December 14 and is now in the Committee on Education and Labor of the Senate. This and similar measures have been fully discussed in the daily press and through magazine articles, and it is surprising to note that in the face of all this publicity very few people directly interested and affected are familiar with the character and purpose of such legislation.

By the act of 1892, it is provided under penalty that "No contractor or sub-contractor may employ any workman or mechanic upon the public works of the United States more than eight hours in one calendar day." The real purpose of House bill No. 9061 is to extend these restrictions to the subject matter of all Government contracts, save those excepted by this bill. The exceptions are as follows:

That nothing in this act shall apply to contracts for transportation by land or water or for the transmission of intelligence, or for such materials or articles as may usually be bought in the open market, except armor and armor plate, whether made to conform to particular specifications or not, for the purchase of supplies by the Government, whether manufactured to conform to particular specifications or not; provided, that all classes of work which have been, are now or may hereafter be performed by the Government shall, when done by contract or otherwise, by individuals, firms or corporations, be performed in accordance with the terms and provisions of this act.

Ambiguity of Language Used

The language in the clauses of exception is identical with that in preceding bills, with the exception of the words "armor and armor plate," which have been added and still leaves the scope of the bill vague and indefinite, and the language of the bill susceptible to many different interpretations. On June 22, 1904, William Collier, solicitor of the Department of Commerce and Labor, wrote an exhaustive opinion at the request of the Secretary of that Department as to the scope of the bill pending at that time, in which he said:

The fourth exception in the bill is "contracts for the purchase of supplies by the Government, whether manufactured according to particular specifications or not." The word "supplies" is one which is used with a great deal of latitude. Its definitions vary from the comprehensive ones given in Webster's Dictionary and in the Standard Dictionary, namely, "that which supplies a want," "that which is or can be supplied; available aggregate of things needed or demanded," down through various limitations to the extremely narrow meanings given to it as used in appropriation bills where legislative provision for one class of articles has caused a general provision for "supplies" to be held not to include articles mentioned in other places in the bill, which would, however, ordinarily fall within the term.

This uncertainty in the use of the word "supplies," like the vagueness of the expression "such materials as may usually be bought in the open market," in my opinion, makes it vitally necessary that the bill should be amended and more specific language used. Uncertainty as to the scope of these exceptions will doubtless result in the contractors increasing the amounts of their bids, or refraining from bidding. If they bid under the impression that the contract which is sought by them is within the exception it may thereafter be determined that it is not within the exception, and, in such event, great loss would result to them.

The question of vital interest to the manufacturer is: "How will my business be affected by this bill if it is enacted into law?" The binding and effective answer must come first from the agent of the Government who is charged with the duty of enforcing the law and finally from the courts, and, in forecasting as far as possible what the decision of the courts will be, it would seem that some consideration should be given to the opinion of such able and unprejudiced counsel.

What Mr. Gompers Seeks

In 1904 Samuel Gompers used this language:

We have been asked: How far does this bill go? How far do you want it to go? If we are candid, and we desire to be, as to how far, we would answer: 'Until it reaches every man, woman and

child who works in the United States.' And I trust that statement will be broad enough and comprehensive enough to satisfy the opponents of the bill.

Thus we have a candid statement from the force behind the bill as to its scope, which, coupled with the opinion of the solicitor of the Department of Commerce and Labor as to its vagueness and uncertainty, should make the thoughtful citizen exclaim, "What next?"

There can be no doubt about the purpose of such legislation. It is intended to limit the hours of labor of all who work. The history of the world teaches that nations begin to decline when they cease to work, and that the nation which works is the one which produces wealth and whose people are prosperous and happy. Any legislation having for its ultimate object the retarding of those sound and healthy activities which promote wealth and thereby the prosperity of our country should not receive the semblance of encouragement.

Industry Suffering from Legislative Causes

That industry still feels the effect of the financial panic of 1907 is appalling, especially since it must be ascribed to removable causes. One of these causes is too many laws and not enough law. During the last Congress we are told that 30,000 bills were offered and that of this number 200 became laws, showing that even in the greatest deliberative body in the world there are too many of those who put forth both mild and extreme measures as a panacea for every industrial, commercial or financial disorder. And, while business men are struggling to turn this wasted energy into more useful channels and exerting every influence to turn idle men into a persistent, energetic, productive and earning force, a great nation of industrious, resourceful and progressive people is languishing under an industrial depression that is greatly aggravated by the proposed eight hour law.

How a Manufacturer Could Be Penalized

The ease with which a manufacturer might place himself in a position to be penalized under this bill is astonishing. For example, a manufacturer, A, in New York makes a contract to supply heavy machinery to the Government. He telegraphs B, a large and reliable manufacturer or jobber in Cincinnati, an order for the engineering specialties used on the heavy machinery. Through the manager of the sales department, B accepts the order and issues instructions to have the fittings boxed and shipped. The stockkeeper reports "no such goods" or "insufficient stock on hand to fill the order." A rush order is given to the foundry and factory, and the goods are made and shipped within the time limit. This is an every-day occurrence, and under the terms of the bill both A and B would have some difficulty in explaining that the goods furnished by B were "supplies," which are or may usually be bought in the open market. In this case they were manufactured, and innumerable such cases would arise under the pending bill, if it should become a law.

If the Government becomes its own manufacturer, the cost of production would be greatly increased, the possibility of building up industry and commerce would be correspondingly reduced, and a great increase in taxes would necessarily follow.

Overtime is out of the question; when eight hours are worked, the workman cannot put in time in addition thereto.

Under the terms of this bill every contractor is compelled to accept a vague and ambiguous liability, or forego the privilege, valuable or otherwise, of contracting with the Government.

Neither public health, public morals nor public comfort demands it at the present time. The eight hour day is coming when our economic condition demands it, but never by law.

Industry is stunned and the nation stands with arms folded, marking time, hopeful for that speedy reorganization of business that can only come when our law makers are made to realize that one rule of action based upon wisdom and common sense is better than a million based upon the whim or caprice, envy or hatred, pride or ambition of any individual or component part of society. The curse of legislation to-day, in its relation to business, is its indefiniteness.

*Civic secretary Cincinnati Business Men's Club.

Against Lower Duties on Iron and Steel

Manufacturers Tell the Senate Finance Committee Why the Underwood Bill Would Do Great Injury to the Entire Industry

The iron and steel trade hearings before the Senate Finance Committee were continued on Wednesday, Thursday and Friday, February 21-23. The case as presented by various manufacturers was introduced on Wednesday by Senator Oliver of Pennsylvania. He told the members of the Committee that the appearance of the independent manufacturers before them was a complete refutation of the idea that the United States Steel Corporation dominates the iron and steel industry of the United States. He emphasized the fact that the Steel Corporation is better able to stand the reductions of the Underwood bill than any other producer. "To the smaller concerns, the men who have every dollar they own invested in this business, the men who would be absolutely ruined and driven to beggary by the enactment of this law, by the injury that would result to the steel business generally, this is an exceedingly serious matter. They are the ones that will suffer by the enactment of this law, because they have no recourse. They have not unlimited capital behind them. They have no reserves of raw material in the shape of immense bodies of ore and coal; and they have not the financial ability to stand up against this proposition. These men would be ruined; and they are the men who are represented here to-day."

Testimony of Joseph G. Butler Jr.

MR. BUTLER. On April 29, 1909, as chairman of a committee, I submitted to the Senate Finance Committee a brief on iron ore, pig iron and scrap. The information and views contained in this brief hold good to-day. There has been considerable reduction in the cost of making pig iron in various localities, as will appear later on. The duty on pig iron under the Act of 1897 was \$4 per ton. This was reduced to \$2.50 per ton in the Act of 1909, a reduction of 37½ per cent. The Underwood bill proposes an ad valorem duty of 8 per cent. With pig iron valued at \$15 per ton this would be equal to a duty of \$1.20. The average value of pig iron exported from Great Britain in 1911 was \$13.30 per ton and on this value the duty of 8 per cent. would be only \$1.064 per ton. This would be a reduction of over 73 per cent. from the duty prevailing before August, 1909. Conditions have been such in the United States during the several years past that it is by no means certain that the reduction made in 1909 was advisable. A further reduction to the rates proposed in the Underwood bill would open the home market to foreign competition.

Both England and Germany, the largest producers of pig iron outside of the United States, produce largely in excess of their own needs. They export large quantities annually, amounting in 1911 to about 2,000,000 tons, which amount could be very considerably increased if a profitable market could be found in the United States. If there is to be an increase in our importations of pig iron there must necessarily follow a decrease in our consumption of Lake Superior iron ore. Large quantities of Lake Superior iron ore find their way into New York, Pennsylvania and some other States whose pig iron industry would be seriously affected by an increase in our imports of pig iron. If we should make less pig iron we would consume less Lake Superior ore and smaller quantities of finished iron and steel, less coke, and so on.

Foreign Pig Iron Costs

The whole matter is therefore reduced to a question of relative costs. The Department of Commerce and Labor has determined the average cost of pig iron in the United States as \$14.01 per ton. This figure, based on the actual cost, by company books, of a large part of pig iron production includes all the large steel companies which have plants in general more economically situated than the smaller companies, especially those smaller companies whose furnaces are situated near the seaboard. These latter would have costs considerably above this average, probably over \$15. Of course the seaboard plants would feel foreign competition more severely than those further inland, which are to be reached by the foreigner only by payment of rail freight to destination.

Foreign costs are difficult to obtain, but the best published figures show a cost of \$9.48 per ton for the Cleveland district in England, \$8.71 for the Luxemburg-Lorraine district and \$10.16 for other parts of Germany. If we take the foreign costs as approximately \$10 per ton and those of the eastern district in the United States as \$15, there is a difference in costs of \$5 in favor of the foreign producer. A portion of this is covered by freights which

must be added to the foreign costs to reach the market. The ocean freight on pig iron is very variable. On account of our exports being of more bulky character than our imports there are frequently times when pig iron is welcomed at merely ballast rates. The ocean freight seldom exceeds \$1.60 per ton. Freight from the foreign works to their ports of shipment would vary but would hardly exceed 90c. per ton. Thus freight might cover \$2.50 of the difference in cost, leaving at least \$2.50 which should be covered by a protective duty if the plants exposed to foreign competition are to live.

Figures of comparative cost can only be approximate; but it is evident that the proposed duty of about \$1 per ton on pig iron would open American markets to the foreign product and cause disaster, particularly to the smaller concerns not far removed from the Atlantic seaboard.

Home Costs May Increase

Furthermore, costs in this country have been increasing and probably will continue to increase. The decline in the iron content of Lake Superior ore, which increases costs of transportation and smelting per ton of pig iron; the rapid exhaustion of the coking coal reserves, which makes it necessary to use supplies mined at greater cost or transported longer distances; the tendency to higher wages which accompanies a rise in general prices—these are some of the causes of increased costs. And it seems probable that all these causes will continue to operate in that direction for some time to come. Therefore a tariff rate which at present seems just may not long remain so; and it is for this reason that the rate established by the Act of 1909 and tried for only a short time under exceptional circumstances might not in future prove adequate to afford protection in this industry.

I submit herewith on separate sheets average book costs of pig iron of different qualities.

[These tables showed for the years 1902-1906 the average cost of producing Bessemer pig iron at the furnaces reporting to be \$13.26, plus "additional costs" of 75 cents a ton, from profit and loss accounting, making a total of \$14.01. For basic iron the total was \$12.82 and for Southern iron, \$9.65.]

When we heard of the framing of the Underwood bill and its final passage by the House, we paid very little attention to it. We had the impression, and some of us still have the impression, that it was a political measure gotten up for political effect, and for that reason we need not worry about it. But some of our good friends were down here and talked with different gentlemen of both parties and they seemed to be in earnest about it; and I began getting telegrams and letters and long-distance telephone messages saying that we ought to call a meeting to consider this; that in justice to our stockholders, in justice to our employees, and incidentally in justice to ourselves, we should take some action. Following out these suggestions, we had a meeting at the Duquesne Club in Pittsburgh. We were surprised at the number of people that were there. The matter was very thoroughly discussed and committees were appointed to represent each particular branch of the industry.

I want to say just a word in regard to making the change from the specific duty to the ad valorem duty. It

opens the door to fraud in the way of under valuations, and I think that should be reason enough if there were no other reason. In addition to that, when the prices are low it makes the protection high, and when the prices are high it makes the protection low.

Labor Will Be Reduced

The Payne-Aldrich bill reduced the rate of the Dingley bill 50 per cent. in round numbers. Mr. Underwood now proposes to reduce the figures of the Payne-Aldrich bill another 50 per cent., so it does not leave very much if his bill should become a law—which heaven forbid. I say, further, that if it should become a law it means a revolution in labor. There is no other way to do it; labor must be liquidated if we are to stand this change in the tariff law. That will apply clear along the line, clear through to the end.

I am very much in favor, and I think all of my brother manufacturers are, of having this tariff question ultimately taken out of politics. A good start has been made. There is a Tariff Board now considering all these questions. I do not think any change in the revenue law should be made without a thorough investigation being made by this Tariff Board, or another one of larger dimensions. Let them do the work instead of all these people that are gathered here doing it for you.

I want to say further that when the Payne-Aldrich bill was formulated in 1909 the iron and steel people met the matter in perfect frankness, gave what information they could, showed their willingness to stand whatever reductions they could and spent a great deal of time over it. I think the same spirit prevails now. I think you will find that the people engaged in the iron and steel business, if it could be shown that anything could be reduced without injuring their business, will be very willing to do it and glad to do it. You will find, possibly, that some of them will suggest it when you get around to them.

Chinese Pig Iron

There has been a lot of talk in the newspapers and otherwise about the Chinese pig iron coming in. Personally, I think for the present there is no immediate danger; the quantity made there is small. Ultimately there might be very serious danger. Labor there is a mere nothing compared with what it is here. Iron ore, coal and everything else are plentiful, and ultimately a very large business might spring up there, and I suppose the Panama Canal would help that. But for the present I think it has been rather overstated—the fear from that direction.

The South's Low Pig Iron Costs

When the Underwood bill was presented in the House Mr. Underwood made the statement that there was a plant in Alabama where the materials were right together and did not have to be assembled, where they could make iron cheaper than at any other place in the United States, if not in the world. And he suggested that it would be a good plan, to save the freight both ways and all that, to move these northern plants down there. That is all very well for Mr. Underwood, but it would look to me very much as if, when he is trying to get this bill through, he is "looking out for No. 1" and that he wants a monopoly down there, and loses sight of all of these hundreds of millions of dollars that are invested in the north.

Raising the Ferromanganese Duty

Just one other point: That is the question of ferromanganese. I will explain that ferromanganese is a form of pig iron and comes in under the pig iron duty. It is absolutely essential to the manufacture of steel. We could not make a pound of steel without ferromanganese or spiegeleisen. It comes in now under the pig iron duty, and brings in quite a revenue. There is only one manufacturer of ferromanganese in the United States, and that is the United States Steel Corporation. If this bill should become a law, you will be injuring the independent companies that are represented here to-day, and injuring them very seriously. Ferromanganese has been coming in at \$2.50 a ton, the same as pig iron. The Underwood bill proposes a duty of fifteen per cent. ad valorem. The foreign value at the shipping point is about forty dollars a ton, so that it more than doubles the rate.

SENATOR WILLIAMS. Would you suggest, then, that the duty on ferromanganese be reduced from the rate in the Underwood bill?

MR. BUTLER. I do not believe the independent steel manufacturers would object if it were made free. You would be perhaps doing them a real service.

SENATOR WILLIAMS. I think it would be a very good idea to make it free, then.

MR. BUTLER. I should have added that the manganiferous ore from which ferromanganese is made is imported, and under the Underwood bill is free. The result will be,

if you want to continue to get revenue from this product, that the independent people can make spiegeleisen and ferromanganese, and will probably do it if this bill should become a law. Therefore, you would wipe out the revenue that you are at present getting from the importations of ferromanganese.

[Mr. Butler gave the committee the following list of the firms he represented: Ashland Iron & Mining Company, Ashland, Ky.; Columbus Iron & Steel Company, Columbus, Ohio; Perry Iron Company, Erie, Pa.; Girard Iron Company, Girard, Ohio; Andrews & Hitchcock Iron Company, Youngstown, Ohio; Pickands, Mather & Co., Cleveland, Ohio; Toledo Furnace Company, Toledo, Ohio; Stewart Iron Company, Ltd., Sharon, Pa.; M. A. Hanna & Co., Cleveland, Ohio; Belfont Iron Works, Ironton, Ohio; Kittanning Iron & Steel Mfg. Company, Kittanning, Pa.; Brier Hill Steel Company, Youngstown, Ohio.]

Testimony of Willis L. King

MR. KING. (Vice-president of the Jones & Laughlin Steel Company, Pittsburgh.) On behalf of the stockholders of the Jones & Laughlin Steel Company of Pittsburgh and their many thousands of workmen, I respectfully but earnestly protest against any revision of or reduction in the present tariff on iron and steel products on the general ground that it would be against public policy, and also for the following specific and cogent reasons:

1. Because the tariff of 1909 barely affords the protection necessary to compete with foreign countries on our eastern coast and does not do so on the Pacific Coast.

2. Because the low cost of labor and low freight cost of assembling raw materials abroad will always prevent our successful competition.

3. Because there is no economic advantage to be gained by consumers of steel products, in that prices are and have been for some time very low in this country, and the large excess steel capacity here will take care of any demand that may arise in the future.

4. Because the steel industry is now operating unprofitably and the added burden of foreign competition would compel drastic reductions in wages and the closing down of many plants.

5. Because foreign steel can be transported to our eastern seaboard for one-third to one-half less than from Pittsburgh, and foreign vessels would carry the freight to the great injury of our railroads and their employees.

6. Because there is as yet no reliable basis of comparison as to costs here and abroad; and it is manifestly unfair, as well as unbusinesslike, to reduce duties until such information has been obtained from the Tariff Board, which, I believe, is now trying to secure these data.

7. Because a reduction in the tariff on iron and steel products would be legislation in favor of foreign manufacturers and against our own flesh and blood. I make this statement with great confidence on the authority of St. Paul, who says, "But if any provide not for his own, and especially for those of his own house, he hath denied the faith and is worse than an infidel."

Wage Reductions Inevitable

All these special reasons can, however, be summarized in one, namely, the question of public policy; for an inevitable reduction in wages and enforced idleness of the workmen, following a reduction in the tariff, will add alarmingly to the spirit of unrest so apparent, even under the high wages now paid, and I would bespeak your earnest consideration of this question.

Of the steel products that we make, wire, wire fencing, nails, spikes and cotton ties are placed on the free list by the Underwood bill, and the following reductions are made in our principal products:

	Payne Law	Proposed Law
Steel bars.....	\$6 per net ton	\$2 per net ton
Steel plates.....	6 per net ton	3 per net ton
Structural.....	8 per net ton	3 per net ton

These figures are based on a price of 1c. per lb. at foreign ports, which I know the English have been and are selling at.

The placing of wire and other products on the free list is wholly indefensible, and the small duty specified on other steel lines is entirely inadequate to allow domestic mills to operate at any profit in competition with foreign works.

While lack of business and excess production have brought about such conditions among American manufacturers that prices are now unprofitable, it is certainly to their credit that wages have not been reduced; but with the additional competition from abroad a serious reduction is inevitable. In my opinion the standard of American living is in more deadly peril than at any other time in the last 50 years, and if any bill approximating the proposed House bill becomes a law serious financial troubles and economic disturbances will result.

Result.
ESCHER & SONS.
 Mechanical and Civil Engineers,
 PITTSBURGH, PA.

I have not brought with me the cost of producing steel in this country, because you have this information in detail through several departments of the Government. I am sorry that the foreign costs are not available, but the fact that England, Germany and Belgium export by far the greater part of their production will convince you, I feel sure, of their ability to manufacture cheaply.

Consumption of Bars, Plates and Shapes

SENATOR WILLIAMS. You manufacture structural steel and plates?

MR. KING. And bars largely. We make a very large line, including tin plate and wire products. And I may say for the information of the committee that the consumption of steel bars in this country, being something that everybody uses, is far larger than of any other one line. I believe that the consumption of steel bars alone would be 6,000,000 to 7,000,000 tons a year. The annual consumption of plates in normal times in this country is about 2,500,000 tons, and about the same amount of structural material. So you will see that these three articles are more than half of all the finished steel produced in this country, and to that extent are the more important.

SENATOR WILLIAMS. What is the capitalization of your company?

MR. KING. Our capitalization is \$30,000,000 and we have \$25,000,000 of bonds.

SENATOR WILLIAMS. What dividend did you declare in 1908?

MR. KING. Four per cent.

SENATOR WILLIAMS. In 1909?

MR. KING. I think we have declared regularly 4 per cent. since the panic of 1907.

SENATOR WILLIAMS. In declaring that dividend, did it represent your entire profit of operation?

MR. KING. Oh, no, sir. We could not exist on 4 per cent. and keep up improvements and betterments.

SENATOR WILLIAMS. I knew that, but I was afraid your statement might give a wrong impression. What became of the balance of the profits?

MR. KING. It went into improvements.

SENATOR SIMMONS. I understood you to say that in your judgment if the duties on iron and steel and the products thereof were reduced as proposed in this bill, or reduced at all, we would not be able to hold our home markets against foreign competition?

MR. KING. That is my belief, especially along the sea coast.

Our Steel Trade with Canada

SENATOR SIMMONS. With a preferential of 35 per cent. in the Canadian tariff in favor of England, how do you reconcile the fact that in 1910 we in the United States sold to Canada \$51,000,000 worth of iron and steel and manufactures thereof, while Great Britain sold only \$11,000,000?

MR. KING. There are two reasons for that in my opinion. One is the question of promptness in getting material from the United States as against the English manufacturer. The second is that these sales that the United States made in Canada were largely in the western or manufacturing part of Canada, where England had to pay quite a heavy freight from Montreal inland. I might say further as explaining our large sales in Canada that England has been very prosperous. In fact, in looking over the whole world the United States seems to be the only country where the manufacturers of iron and steel have not been prosperous. That is particularly true of England and Germany; and the fact that they have been able to get good prices at home and perhaps can export to other countries under more favorable conditions I think will account for their failure to sell as much in Canada as they otherwise would.

SENATOR SIMMONS. In that section of Canada where freight rates are about equal, where we have not this advantage and where England has this preferential, how do you account for the fact that we sell over England?

MR. KING. We do it to some extent on account of special sections we have made rolls for from time to time; they may not be able to get those in England. In other words there is a question of availability and quickness in getting material from the United States that operates in our favor, even if the price were against us.

Exports as Proof of Power to Compete

SENATOR SIMMONS. I want to ask you another question. The statistics show, as I remember it—we had it up here a day or two ago—that of iron and steel rails sold in the neutral markets of the world, where tariff conditions are supposed to be the same as between Europe and this country, we sold in those neutral markets in 1910, \$10,546,000 worth of steel rails, as against \$13,000,000 for England, \$12,000,000 for Germany, \$4,000,000 for Belgium

and \$3,480,000 for Holland. How do you account for that? How are we able to go in these neutral markets, where the tariff rates are the same, and sell within a fraction as much as steel rails as England sells; within a fraction of as much as Germany sells; more than twice as much as Belgium sells and three or four times as much as Holland sells?

MR. KING. I would answer that in this way. I think that the manufacturers of the United States, if they chose to sell an article—a small amount of it—in any neutral market, would perhaps be justified in doing it; in other words, say, if you chose, for the sake of running your mill full, and thought it was good policy, to sell 10 per cent. of your product abroad even at cost or a little less than cost, I think that would be good business. I think perhaps this is what the rail makers do. But I believe England exports 40 per cent. of her product, Germany 50 per cent. and Belgium 60 per cent., and when it comes to those countries it is very evident, if they can export such a large proportion of their entire product, they must make it more cheaply than we do.

SENATOR SIMMONS. But it appears from statistics that, leaving out the exports from one European country to other European countries, and leaving out the exports of European countries to their dependencies and colonies, in the neutral markets of the world the United States is exporting as many steel rails, within a fraction, as any country of Europe. You would not call that a dumping process, would you?

MR. KING. I would call that a question of policy, a question of whether they desired to run their mills to that much larger extent for the small amount they export.

SENATOR SIMMONS. Would you not consider the fact that the United States can sell steel rails in the neutral markets of the world in competition with England, and get practically as large a share of the steel rail trade of the neutral markets of the world as England, as indicating that we can compete with England?

MR. KING. I think we could compete, to a small extent.

SENATOR SIMMONS. If we can compete with England in the sale of steel rails in the neutral markets of the world, as is shown by the fact that we are selling practically as many steel rails in the neutral markets as England is, why can we not compete with England in that product in our own market?

MR. KING. I would say in reply to that that the English cost is less than that in this country. I believe that, although I do not make rails and cannot speak intelligently on it.

SENATOR SIMMONS. Will you not give the committee, if you can, a reason why, if we can and do compete with England in this product in the neutral markets of the world and sell as much, or practically as much, to these neutral customers as she does, we can not do that same thing right here at home?

MR. KING. I think that the English do just as the Americans do; their home market is their best market.

SENATOR SIMMONS. It does not strike me that that is an answer to the question.

MR. KING. It may not be a logical answer, but I think it is a fact.

[A long colloquy ensued in which Senators Heyburn, Simmons and Williams asked Mr. King a great many questions bearing on competition between the Steel Corporation and the independent steel manufacturers. Mr. King told of the agreements that existed at one time as to prices, but that had been done away with several years ago. Senator Williams asked a number of questions bearing on the close approximation of prices for steel products asked by different makers even to-day. Mr. King explained how readily a seller could learn from the buyer what other makers were asking and imparted some of the elemental facts as to the conduct of the business of selling, which need not be reproduced here.]

The Tennessee Company Bogie

SENATOR SIMMONS. Is there any instance in your knowledge where the Steel Corporation, finding that one independent was giving them trouble in cutting prices, has interfered for the purpose of embarrassing him in his business, and brought about conditions that would force him to restore his price or to sell out?

MR. KING. Not to my knowledge.

SENATOR SIMMONS. Did you know anything about the conditions which existed with reference to the Tennessee Coal, Iron & Railroad Company before they bought them out?

MR. KING. No.

SENATOR SIMMONS. Were they not giving the Steel Corporation some trouble in the way of competition?

MR. KING. I do not think they were.

SENATOR SIMMONS. Do you not think that was an ele-

ment in their desire to acquire that property, making conditions which forced the sale of that property?

MR. KING. My idea about the acquirement of the Tennessee Coal & Iron Company by the corporation is that they intend finally to use that for an export proposition, on account of the low cost of pig metal there, and the cost of assembling pig metal—the ore right in their back yards there. There is no doubt that they make the pig metal cheaper in the Birmingham district than in any other, and for that reason it would be a very favorable point from which to export.

SENATOR SIMMONS. Did not the Tennessee Coal & Iron Company undertake to cut prices?

MR. KING. They did not make enough to do very much damage.

SENATOR SIMMONS. Did they not try to cut prices? Did they not become troublesome to the corporation by their attempt to cut prices?

MR. KING. I do not know it of my own knowledge. They had a market for rails there, probably have sold rails cheaper in the South, cheaper than the corporation would, on account of the high freight rate. But to my personal knowledge they were not much of a competitor.

High Freight Rates to the Pacific Coast

SENATOR HEYBURN. I would like to ask you about structural steel on the Pacific Coast. What conditions would enable American structural iron to compete on the Pacific Coast?

MR. KING. The tariff would have to be very much higher than it is now, Senator.

SENATOR HEYBURN. Or the freights lower?

MR. KING. Or the freights lower. I will accept that correction.

SENATOR HEYBURN. Have you any figures as to how much the freights would have to be reduced?

MR. KING. All-rail freight is 80 cents a hundred pounds to the Pacific Coast, which would be \$16 a net ton. That is against \$5 or \$6 vessel freight from Belgium. We have the opportunity of shipping by vessel from New York around to the Pacific Coast at about \$11 a ton—\$11 or \$12—so that the difference would really be, say, \$7 a ton against us.

SENATOR HEYBURN. I would rather deal with the freight question. I want to get some foundation here for general use in legislating in regard to that matter. How does that rate per ton on structural steel to the Pacific Coast compare with the rate on other freight of the same character as to volume and shipping facilities? It is very much higher, is it not?

MR. KING. I rather think it is.

SENATOR HEYBURN. Is it not about between \$4 and \$5 higher than what you would call relative freight rates to the Pacific Coast?

MR. KING. I must plead inability to answer that intelligently. I think it is higher, though.

SENATOR HEYBURN. And they charge as much for a comparatively low-priced form of steel as for a high-priced article?

MR. KING. I think they do.

SENATOR HEYBURN. And that is what shuts structural steel from the Pacific Coast, the freight rate?

MR. KING. Largely.

SENATOR HEYBURN. If you had a freight rate reduced to a reasonable basis, you would supply that market, would you not?

MR. KING. It would have to be reduced to such a point that I believe the railroads could not carry it profitably.

SENATOR HEYBURN. Do you make that statement upon any calculation you have made, or upon the railroad claim? I know they claim it.

MR. KING. It is more largely on their claims, I think, than my own.

SENATOR HEYBURN. It is a very great burden upon the Pacific Coast to be at the mercy of the foreign producer?

MR. KING. Yes, sir; we think so.

SENATOR HEYBURN. And I am looking for some road out of the difficulty.

MR. KING. I hope you will find some way out.

SENATOR HEYBURN. We will be somewhat persistent in trying to find it.

Testimony of Leonard Peckitt

MR. PECKITT. I represent the Empire Steel & Iron Company, of Catasauqua, Pa. We are what is known in the trade as producers of merchant pig iron, having no finishing mills of our own. The capital of the company is \$2,500,000 of preferred stock and \$1,250,000 of common stock. I have prepared a statement of our business during the last ten years, and as it has been published in *The Iron Age* it seems to me there is no reason why it should not be given here. Our books for the ten years 1902 to 1911

inclusive show that we have made 1,790,000 tons of pig iron, and that our net earnings have been \$1,907,751, which shows that we have been able to earn but \$1.07 a ton. Figuring that in percentage, it amounts to 5 per cent. on the capital invested.

Middlesbrough Pig Iron Would Compete

In telling why in my opinion the rate on pig iron recommended by Mr. Underwood is too low, I might mention English Middlesbrough pig, which would doubtless be heard from to a serious degree, and perhaps more than from any other point at present, on any such basis of duty as we are now considering so far as our district is concerned. No. 3 Middlesbrough pig to-day is selling at 49s. cash, or approximately \$14.72 f. o. b. either Philadelphia or New York, which are of course the tidewater points that interest us directly; for our plants in Pennsylvania and New Jersey are within a radius of 60 to 80 miles of the seacoast. The cost of the Middlesbrough iron itemized is as follows:

No. 3, f.o.b. Middlesbrough.....	49s	equals	\$11.95
Duty	8%	equals	.95
River Tees dues.....	3d	equals	.06
Insurance	3d	equals	.06
Freight average, say.....	7s	equals	1.70
			\$14.72

The present rate of freight to New York or Philadelphia happens to be 9s. per ton; but this is abnormal, and over the last two years I have known it as low as 5s. per ton. I am also not unmindful of Chinese pig, which under the present rate of duty is to be found along our Pacific Coast in considerable quantity, and which a year or so ago was also found in New York and Philadelphia. My opinion, however, is that it will be some little time before Chinese pig will be brought in in sufficient quantity to do much harm; but Middlesbrough iron, of which there is at present more than 500,000 tons stored on the other side, is really what I am afraid of just now.

Our producing capacity is approximately 300,000 tons of pig iron yearly, and we are also miners of iron ore, to a small degree, producing upwards of 200,000 tons annually from our New Jersey properties.

Pig Iron Cost in Eastern Pennsylvania

The present average cost of pig iron in this neighborhood, which includes the Lehigh and Schuylkill Valleys of Eastern Pennsylvania, is about \$13.75 per gross ton; and as many of the producers are without either fuel or ore of their own, the cost may be considered as net, or without, any profit on the ingredients comprising the cost. As the market for our product, owing to competition in other districts, is pretty much restricted within, say, a radius of 100 miles, and as the average railroad freight to point of consumption is at least \$1 per ton, I am afraid foreign iron would close most of our furnaces hereabouts, excepting in boom times, which on any such basis of duty would be a rare occurrence.

I do not wish to be misunderstood in these statements, and am speaking for the district as a whole, admitting at the same time that there may be one or two exceptions, who, largely self-sustaining in ore and coke, can doubtless manufacture at a somewhat lower cost, which will surely be needed if the duty on finished products is to be cut to the Underwood schedule.

A couple of years ago you may remember my position as regards the duty on pig iron and on iron ore. At that time I contended that \$2.50 on pig iron was as low as the industry would stand for a long time, and further thought that the duty on iron ore should be gradually reduced rather than made free at one sweep, which was afterwards modified by leaving it 15 cents per ton, as against 40 cents in the Dingley schedule. I shall, however, make no further claim for the retention of the iron ore duty, feeling that the time has now perhaps come when all raw materials should be on the free list. But pig iron is not raw material, and I therefore urge the present law makers to reaffirm the Payne-Aldrich rate of \$2.50 as being imperative if the industry in this eastern section of Pennsylvania is to be preserved. I have been told on good authority that Mr. Underwood says the average cost of American pig iron is \$12 a ton, and that every commodity should stand a fair proportion of the Government revenue. This, generally speaking, may be about right, but unless there is to be a pronounced reduction of wages throughout this eastern section we cannot hope for any such costs.

A Cost of \$13.78 a Ton Last Year

Owing to general business depression our company's total production of pig iron during last year was down to 143,728 tons, costing (all fixed charges included) \$13.78 per gross ton. We employ from 900 to 1,500 men, depend-

(Continued on page 554)

The Cambria Steel Company's Report

The report of the Cambria Steel Company for the year ended December 31, 1911, is the most comprehensive it has thus far issued. Fuller details of the business are given and the showing makes a 16-page pamphlet of broad pages. The income account compares as follows with that of the preceding year:

	1911.	1910.
*Total income from operation.....	\$3,618,333	\$5,461,235
Extraordinary replacements.....	369,587	514,529
Net earnings	\$3,248,745	\$4,946,806
Fixed charges and interest.....	471,407	393,474
Net income	\$2,777,338	\$4,553,332
Dividends	2,250,000	2,250,000
Depreciation account	150,000	100,000
Betterment and improvement account.....		2,090,039
Total deductions	2,400,000	4,440,039
Surplus for the year.....	\$377,338	\$113,294
Previous surplus	2,414,089	2,398,728
Total surplus	\$2,791,428	\$2,512,022
Net charged off for bad debts.....	7,325	97,932
Profit and loss surplus.....	\$2,784,103	\$2,414,090

*After deducting all expenses, including ordinary repairs and maintenance, approximately \$2,000,000 for the year 1911, charged to cost of production.

The general balance sheet as of December 31 compares as follows:

Assets.	1911.	1910.
Plant, lands, etc., subject to Cambria Iron Co. lease	\$33,090,304	\$33,090,304
Previous plant additions	14,636,943	12,546,904
Plant additions, current year.....	1,430,855	2,090,039
Equipment additions	1,214,376	1,188,723
Real estate	422,932	424,892
Sundry securities	1,592,209	1,594,109
Material and supplies.....	11,192,071	10,467,502
Cash	603,092	655,463
Accounts receivable	3,695,814	3,139,776
Bills receivable	92,865	93,681
Total	\$67,971,466	\$65,291,398
Liabilities.		
Capital stock	\$45,000,000	\$45,000,000
Bills payable, term notes.....	2,000,000	
Reserve for furnace relining.....	89,581	
General depreciation fund.....	4,000,000	3,850,000
Betterment and improvement fund.....	11,690,039	11,690,039
Accounts payable, including dividends.....	2,407,742	2,337,269
Profit and loss account.....	2,784,103	2,414,089
Total	\$67,971,466	\$65,291,398

From the accompanying statement signed by Chairman Effingham B. Morris and President Charles S. Price the following extracts are taken:

The Cambria Plant

Work on a 6000-kw. turbine driven generator, authorized early in the year, and on the necessary boiler changes to provide for additional steam required, was carried on during the year. This new generator will be installed and operative by April, 1912. An experimental briquetting plant to develop the possibility of briquetting fine ores is being installed at the 1 to 4 blast furnace plant. The reconstruction of the conveyor in Cambria blooming mill, whereby blooms from both blooming mills can be conveyed to either the 30 in. beam, billet and slab mill on the south end, or to the 18-in. continuous mill and the rail mill on the north end, was completed about the end of the year and is now in service.

The Gautier Plant

The 8 and 12-in. semi-continuous electrically driven bar mills mentioned in the last annual report as under construction and work on which, owing to the general business depression, was virtually suspended for the winter months, were completed during the year. Owing, however, to the continued lack of demand for steel products, orders were not available with which to start these mills until in August for the 8-in. mill and October for the 12-in. mill, and then only for operation on single turn. The somewhat better volume of business already in evidence permitted the putting of the 8-in. mill on double turn in September, and the 12-in. mill on January 1, 1912. The operation of these mills to date can only be considered in the light of the usual necessary development period for men and machinery, incident to new plants, and not as having contributed to the year's financial results.

The Franklin Plant

Blast furnace ore bridge No. 2 was equipped with a new machinery tower, much heavier and stronger than the original one, and the bridge structure greatly strengthened. The structural frames of the open-hearth charging machines were rebuilt along stronger and heavier lines. The 40-in. blooming mill was equipped with new steel housings and a portion of the foundation rebuilt.

The axle finishing shop of the steel car department was rearranged, and two new boring mills and five heavy motor-driven axle finishing lathes were installed. A carpenter shop, in which to machine the woodwork for composite cars, was also built and is in service.

The Rod and Wire Plant

Work on the rod and wire mill was pushed actively from the beginning of the year until the practical completion of all the departments, and the rod mill turned out the first rods February 15, 1911. The several departments—wire drawing, nails, galvanized wire and barbed wire—became operative at successive periods between April 15 and December 31. This completed all departments originally proposed for the plant with the exception of the poultry netting and wire fence departments, the first of which will be operative by February, 1912, and work on the latter is progressing.

The starting of the several departments of this plant was successfully accomplished, but owing to the handicap of building up an organization, the limited portion of the year in operation, a severe curtailment in the market demands and with low selling prices due to keen competition, the results, while on a remunerative basis for the closing months, were not sufficient to offset the starting expense, and have consequently contributed nothing to the year's net income.

Coal

The company's Johnstown mines produced during the year 1,313,073 gross tons of coal. The question of increasing the coke production to practically the requirements of the works by the construction of additional by-product ovens has had constant attention. The company was the pioneer in the United States in the development of by-product ovens for the production of metallurgical coke, and its plant of 372 Otto-Hoffman ovens, each $4\frac{1}{2}$ tons capacity, is producing a coke from the local low volatile coal that has proved by years of daily use, side by side, equal to the best Connellsville or standard coke. Later construction elsewhere has been of ovens of 10 to 12 tons capacity, using a non-swelling coal. As the large unit is the logical size for economy of production, it has been the aim of the company's staff to adopt this capacity of oven for the local coal. This coal, however, with its swelling character, introduces a construction problem that, owing to the large investment involved in the erection of by-product ovens, has delayed recommendation for additional ovens pending more exhaustive studies and tests. The use of a portion of higher volatile coal to produce a non-swelling mixture introduces problems of cost, and would make necessary the purchase of a large acreage of high volatile coal, whereas the company's acreage of local coal adjoining its plant is sufficient to supply its consumption of coke for fully 75 years. Both its own experts and those of the various oven construction companies have been at work diligently in the solution of the problem.

Labor

No general changes of rates have been made in the forces employed in any department, and at no time in the previous history of the company's operations has there been such a marked and long-continued drop in the prices at which its products were sold without one or more general reductions in wages. Owing, apparently, to the exodus of foreign labor when the curtailment of operations was first in evidence in the fall of 1910, the company, in common with others, has been confronted more or less throughout the present year with a shortage of labor.

General

The sums expended in ordinary repairs and maintenance and in replacement and reconstruction, while less than last year, in part due to decreased tonnage, do not

indicate any falling off in the physical condition of the plant, which has been maintained at a high standard of efficiency.

The year has been one of the most trying in the history of the steel trade, differing from the usual trade depression in that there was no apprehension of underlying financial conditions, yet a distinct cloud of doubt and uncertainty so dominated business that consumers' stocks were reduced to the minimum and buying confined to the immediate necessities of the purchaser. Orders were contingent upon delivery, and larger and more diversified stocks had to be carried to meet the demands and warehouse competition.

The board found it advisable on May 1, 1911, to negotiate \$2,000,000 5 per cent. three year gold coupon notes to provide for current needs. As additions to plant for the year amounted to \$1,430,855.79, the funds provided by this loan were largely absorbed in the improvement account, and the balance in working capital necessitated by the expansion of the business.

The first of the year found the car shop without orders, and after completing 1000 cars from an order of the previous year, the plant was idle until practically November 1, when sufficient orders were obtained to start on about two-thirds capacity.

The volume of business was somewhat better at the close of the year, as indicated by an actual tonnage of specifications on the books on December 31, 1911, of 189,077 gross tons, in comparison with 42,923 gross tons on December 31, 1910.

The Pressed Steel Car Company's Year

The thirteenth annual report of the Pressed Steel Car Company shows the results for the year ended December 31, 1911, to have been as follows, compared with the previous year:

	1911.	1910.
Gross sales	\$11,331,064	\$27,975,978
Net profits	892,836	1,848,366
Depreciation, etc.		280,000
Balance	892,836	1,568,366
Preferred dividends	875,000	875,000
Surplus	17,836	693,366
Previous surplus	7,347,005	6,653,639
Total surplus	\$7,364,841	\$7,347,005

The general balance sheet, as of December 31, compares as follows:

Assets.		1911.	1910.
Properties and franchises.....		\$26,947,062	\$26,840,665
Securities		2,961,170	2,785,095
Taxes and insurance not accrued.....		14,060	7,796
Accounts received		2,005,120	3,252,966
Inventory		1,147,973	640,799
Cash		1,515,532	1,610,819
Total		\$34,590,919	\$35,138,140
Liabilities.		1911.	1910.
Common stock		\$12,500,000	\$12,500,000
Preferred stock		12,500,000	12,500,000
First mortgage gold notes.....			500,000
Purchase money mortgage.....		75,000	75,000
Accounts and bills payable.....		1,018,711	1,062,087
Accrued wages		114,616	124,674
Preferred dividends		218,750	218,750
Accrued interest			10,623
Reserve for contingencies.....		800,000	800,000
Surplus		7,364,841	7,347,005
Total		\$34,590,919	\$35,138,140

From the accompanying remarks of President F. N. Hoffstot the following extracts are taken:

The usual charges have not been made this year for depreciation, as it seemed unnecessary, since the company's plants have only operated to about 25 per cent. of their capacity, and in former years, under full operation, large sums were charged off for depreciation to meet just such contingencies.

Up to August 1, 1911, there have been fewer cars ordered than in any year of which we have record. About this time the prices of materials entering into car construction were considerably reduced, and car builders in general, in consideration of the welfare of their employees and desiring to preserve their shop organizations, offered to sell cars at about cost, which resulted in a large amount

of business being placed, but even with this increased activity the total car orders placed were less than in any year since 1903.

The company accepted some of these orders on this low basis, but we have reason to anticipate that the volume of business will increase, as during the past three years the orders for equipment have been materially below the average annual requirements, and should this be the case the new business will likely be taken at a fair margin of profit.

The last of the issue of \$5,000,000 notes securing a mortgage given the Morton Trust Company in 1901 was paid off during the year, thus freeing the company from all indebtedness other than a small purchase money mortgage maturing in June, 1912, on the Allegheny Works.

During the year \$283,572.18 was expended on improvements; of this amount \$44,972.58 was spent on the passenger car department at McKees Rocks and the balance on the Allegheny plant in rebuilding the original pressing department, installing turbine exhaust system and building an overhead run-way and transfer crane to handle raw materials, which enabled us to cancel the lease on adjoining property.

The two Pittsburgh plants and the Hegewisch plant have been brought up to the highest state of present day mechanical efficiency and their location affords the company an opportunity to divide the business to best advantage with regard to local requirements. The improvements made at the Allegheny plant will bring it up to the standard of the McKees Rocks plant, and when business offers the cost of production should be as low at one plant as at the others.

The engineering department has been active in new work. Eleven patents were granted during the year and assigned to the company; 22 applications are still pending and several more are in course of preparation. The inventions developed by this department are a source of revenue to the company; with the rapid development of the steel passenger car business in this country it is most important to protect methods and design and the greatest care has been taken in this respect.

The volume of business turned out by the passenger car department was almost as great as the previous year. With the orders on the books at the close of the year and the outlook for new business, this department should be able to make the best showing it has ever made. It is also in better shape to turn out product at a lower cost, due to improvements and extensions previously mentioned.

As was mentioned in last year's report, the construction of the new steel car shop at the plant at Hegewisch, Ill., was commenced during the year and will be completed early in 1912. The contracts for buildings and machinery were placed at a time when prices were lowest. This plant in full operation will be as efficient and profitable as the company's other plants. During the year some cars were built and a large number repaired, thus keeping down overhead charges and shut-down expenses. Considerable business has been booked for the year 1912, which will show a fair margin of profit.

The Chicago Foundrymen's Club

On January 20 the members of the Chicago Foundry Foremen's Association organized the Chicago Foundrymen's Club. The formation of this club as the successor to the previous organization was suggested as making more apparent the desire to interest and include all those interested in foundry matters whether or not they were actively engaged in foundry operations. The first regular monthly meeting of the club was held February 17 in the rooms of the Western Society of Mechanical Engineers. The address of the evening was presented by Henry M. Lane, editor of Castings, on the "Testing of Core Mixtures and the Controlling of Oven Temperatures."

The Wheeling Steel & Iron Company, Wheeling, W. Va., has re-elected its old board of directors. The annual financial statement showed that the net earnings for 1911 were over \$350,000; dividends amounting to \$449,000 were paid; the surplus was \$2,378,000, an increase of \$153,000 over that of 1910. The bonded indebtedness was reduced \$30,000 during the year.

THE IRON AGE

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Progress on the Steel Rail Problem

What more than anything else stood out in the conference of railroad presidents and steel company presidents in New York on February 15 was the disposition to be fair in statement and in action on the grave issues involved in the steel rail problem. There were differences of opinion growing out of differences of experience and viewpoint. But there were none of the sweeping statements that have marked some stages of the rail controversy, illustrated even so recently as last week, when the vice-president of the Great Northern Railway said in print, "All the roads have found for the last two years that the quality of rails has been deteriorating." Presidents of important lines said just the contrary of this at the New York conference. President Brown of the New York Central said, after telling of unsatisfactory experiences with the rails of a few years ago:

Last year we bought about 106,000 tons of open-hearth rails, which are giving us very satisfactory results. Notwithstanding the almost unparalleled severity of conditions this winter, and with a very heavy traffic—our Century running almost every night with two of our heaviest passenger engines pulling it—I do not think we have had a single break of those rails, except a very few that we traced directly to a broken wheel.

President Truesdale of the Lackawanna gave this testimony:

In the last two or three years with the open-hearth rail we have been using we are getting very satisfactory results. We are not getting the use we would like to on the crooked portions of our road, even from the open-hearth rail, but with the inspection we are giving the rail and with a carbon content I think higher than most of the companies use, we have comparatively little complaint from breakages, and we are certainly getting a good deal better rail than we did when we took up this question about three or four years ago.

A. W. Gibbs, chief mechanical engineer of the Pennsylvania Railroad, said on this point:

We have had a large committee working on this and we have been tabulating the results, and so far the evidence does not show that rails rolled on recent specifications have been breaking to anything like the same extent as the older rails. We have been rather pleased so far with the results.

John D. Isaacs, consulting engineer of the Union Pacific, while saying that the heavier rails have not so far justified the hope that their use would be attended with a corresponding reduction of rail failures, made an exception of "the last two years, during which the manufacture of rails has been much improved."

H. Walters, chairman of the Atlantic Coast Line and of the Louisville & Nashville, said:

Like all the other roads, we are very anxious to improve the quality of rails, even though we have not had a great many broken rails. But our experience in the last four years has been so satisfactory with the open-hearth rails which we are using that we do not really feel that we are called upon to make much change in our own warm locality.

President Howard Elliott, of the Northern Pacific, made the remarkable statement that in the first 16 days of January this year that road had one 90-pound rail break west of the Rocky Mountains against 10 85-pound rails, while in the cold country east of the Rocky Mountains, in the unusually severe weather of that period 177 90-pound rails broke and no less than 109 85-pound rails. While expressing the belief that a well rolled 90-pound section is apt to stand up nearly as well as a heavier rail, he held an open mind on the subject "because," he added, "we have found that our

90-pound section has stood up extremely well as compared with the 85-pound section that we bought two or three or four or five years ago."

What will work strongly just now for closer co-operation between the railroads and the rail manufacturers is the increasing activity of the State and Federal Commissions for railroad regulation. In the past four years the best talent at the command of railroads and steel works has been concentrated on the rail problem. A vast amount of data has been gathered. Some of it has not yet been digested and made of use; but no such valuable data can be obtained in the same time through any other agencies. It is of the greatest moment that the makers and users of rails, who know what is to be known on this question, pull together for its right settlement, rather than allow the sensational use of some of their differences to bring uninformed commissions pell mell into the midst of things, with results that neither side will want. Notwithstanding some reckless assertions to the contrary, very great progress has been made toward more satisfactory rail conditions. It is safe to say that the conference of two weeks ago will have set the movement still farther forward, if the same frankness shown there in giving all the facts which maker and user have, continues in the work now to be taken up by the joint committee.

The Piece-Work Wages System

The piece-work system has stood the test of years and has demonstrated its worth, its application to manufacturing now being widespread. Because of this, a defense of its value may seem to many to be superfluous. Yet it is a fact that there are numerous establishments in which there is either no attempt to introduce piece-work or else its adoption is only partial. To such it will not be amiss to explain more fully its possibilities. There is little excuse for any shop which manufactures in quantities having any of the producers working on day work; and it is quite possible as well to arrange to pay some of the so-called non-producers on a piece-work basis.

Piece work has two points of especial worth, either of which is of sufficient value to vindicate its introduction. The first, and perhaps the most important, of these points is the incentive to increased production which this method of payment, when properly administered, can be shown to build up. History tells repeatedly of the workings of incentive on nations, showing just as often the deplorable results which inevitably follow the loss of incentive. Here we are dealing with a natural law, of all laws the most rigid; obedient to this law we find the most rugged tree growth in the spots where the tempest beats with the greatest violence. And in the growing efficiency of our manufacturing, in the progress they have made, the incentive supplied by the piece-work system has played an important part. Although there will be some who will defend the efficacy of other means of speeding up the help, it will hardly be denied that there can be no stronger incentive than the full pay envelope, nor is there any steadier, more constant influence than definite, well-chosen piece rates.

From the point of view of the manufacturer himself, it is extremely comforting to know definitely what the productive cost is per unit. With day work it is absolutely impossible to know this until the work is

done, when a comparison may be made with past performances. Moreover, to pay his labor on a piece-work basis will be exactly what every manufacturer is doing in his purchasing of commodities. In this latter he insists upon an agreed price per quantity before placing the order; he does not word his order "Send so much of such an article and let me know how much I owe you." But he does exactly that when he pays his producers on a day-work basis.

To those who have not gone far into the method of paying by piece work the general or wider application may seem to present a number of difficulties, which may seem of such significance as to deter them from taking it up. One such difficulty is held to be the clerical expense which is commonly supposed to be contingent with the operation of the system. Another is the proper application and fixing of rates to all classes of work. As far as the clerical expense is concerned, it is not hard to show how well the extra expenditure pays for itself; and as for the other difficulty, shops are to be found in which one would not be far wrong to say that "everything is on piece work." For example, not only are all the productive operations performed at a definite rate per unit quantity, but such work as the sweeping of the rooms and the inter-department transportation of materials is also undertaken at fixed rates.

This last undertaking is rather unique and would seem at first to be impractical. Yet it was not a hard matter to fix a list of rates per 100 pounds carried from one room to another based on the distance traveled. The work is carried on four-wheeled trucks, one man to a truck. The immediate result of the introduction of this plan of payment to the trucking was a saving of \$5000 a year. There showed, as well, contingent advantages not at first foreseen, and the principal one of these was the added care a truckman began to use in getting his load to its destination. Spilled and miscarried work became comparatively rare, for when the men were paid on this new basis it became distinctly to their advantage to lose no time picking up spilled work nor to deliver any material to the improper localities.

Right here, however, it is well to insert a few words of caution, not only to those who may contemplate taking up the piece-work plan of payment, but to those already using it. It is important that the plan be very thoroughly understood in all its phases before the matter is gone into, for, like all forces for good, a certain skill is required to properly control it and get the desired effect. An overdose of the best drug in the world may be disastrous. Accordingly, the administration of piece work is most successful when carried out strictly on the square deal. To make plain, although increased production and fixed labor costs are much to be sought, yet the good will of the working force is of still greater importance. The ordinary producer will welcome any arrangement with his employer to cover payment for individual output at a stated amount per unit quantity. The history of past labor troubles, indicating that labor has objected to the introduction of piece work, shows clearly as well that the objections were founded on a distrust of the employers. What the producers do not like about piece work is the "cutting" of rates which so often takes place. Consequently, the successful application of piece work to a factory depends almost wholly on an absence of "cutting."

For a number of reasons, among which are com-

petition and errors in estimating, some cutting has always seemed justified. It is regrettable in any case to cut a price, but especially so when the action bears the least resemblance to a penalty for an individual workman's cleverness or industry. It is just that sort of man who should be encouraged to outdo his fellows by freedom from rate cutting; a factory full of just such men would make the owner invincible.

A good safe rule can be deduced from the foregoing, a rule the following out of which will make piece work quite successful. It is this: Set all rates rather low than high, and try to give yourself the name of raising prices more often than cutting them. Raise a price whenever you are convinced it is unfair to the workman; give him a fair return for his labor, and freely allow to the exceptional man a fatter envelope than his fellows. You cannot lose by such a policy.

Good Machine Tools Attract Good Workmen

A manufacturer of machinery, who has converted an old time machine shop into one of the highest efficiency in methods and equipment, asserts that good machine tools bring good workmen. In his experience, which includes that of the evolution from the old-fashioned to the modern, he has found it very much easier to hire high-class workmen when they know they are to operate high-class machines. Probably one reason for this is that desirable men take pride in their work and want the best equipment with which to do it. A glance in the tool chest of a good machinist proves this statement, for he usually has an elaborate, well-cared-for kit of small tools and instruments. The man who is particular about his own tools must be attracted by modern machinery. Oftentimes he rates his chance of advancement by the amount of work he can produce, and the better the machine the greater the volume and the more satisfactory the product. Improved manufacturing facilities thus constitute an element which should not be disregarded in the general aim to secure efficiency.

Correspondence

Problem in Maintaining Piece Prices

To the Editor: Referring to the article on page 367 of *The Iron Age* of February 8, it would be interesting to learn the outcome. Surely the whole problem was not solved by removing the brainy boy to another sphere of usefulness, and his case fixed up satisfactorily as between himself and his employer. How was that particular kind of piece work done afterward? Was it done at a reduced figure by the same boys who learned the brainy boy's method, or were they all discharged and a new set instructed, at a necessarily reduced rate? Then, again, if the rate was reduced, the "ideal" of not reducing rates without the introduction of improved appliances was smashed, or at least crippled. L. P.

NEW HAVEN, CONN.

Answer

One purpose of the article was to demonstrate that, no matter how zealous a manufacturer may be in maintaining, in a premium or piece-work system, the principle that a price once fixed shall never be reduced, the occasion may arise when the rule must be violated for the welfare of the plant as a whole.

In the case in question some 10 boys suddenly increased their earning capacity from, possibly, \$1.25 to \$4 a day. A bright boy had developed a perfect cycle of operation in removing the burr from drill holes in small metal pieces. This he accomplished on his first day of

employment. The other boys immediately followed his example and their earnings jumped tremendously on the piece price at which they were working. The boy who had made the discovery should never have had his earnings reduced had he remained on the job. On the other hand, it may be argued that his associates, whom he aided, had not the same right to the results that he had. They were in the same position, in a sense, as if their foreman had developed a new method and instructed them in its use. The originator was taken from the work and given employment where he had his reward. The piece price of the others was reduced. This was a violation of the manufacturer's principle, yet what he did was analogous to a condition which would have arisen had a better machine been installed.

The manufacturer himself tells the incident as a deliberate violation of his principle. But he felt that it would be a strongly disorganizing influence in his large works if a group of boys received wages well in excess of the average paid the men. There would doubtless have been dissatisfaction. Ever since the incident occurred he has felt regret, not for what he did, but for the circumstances which compelled the action.

Proposed Accelerated Corrosion Test

To the Editor:—I read with interest the proposed accelerated corrosion test presented by William D. Mainwaring in your issue of February 15. The writer used the

same test over two years ago and finally abandoned it. My apparatus was different but answered equally as well. I inclose a photograph of it. The different atmospheres used were passed in through A. The different samples to be tested were suspended by glass hooks, as shown. Almost any desired atmosphere could be obtained in the flask. The apparatus is inexpensive and can be prepared in a short time with little effort.

In regard to the merits of such a test, I believe it to be of doubtful value. Results which I obtained by repeated tests were very inconsistent, very small changes in manipulation giving unreliable results. It is very difficult to determine in most cases the amount of corrosion which has taken place. Nature may be roughly approximated in the apparatus but by no means can it be imitated. Again, when we attempt to accelerate the test we destroy its value entirely.

WM. R. FLEMING.



Scheme for Testing Metal Under Artificial Atmospheres

NEWPORT, KY.

Chairman Gary's Bill for a National Corporation Commission

Chairman Elbert H. Gary, of the United States Steel Corporation, has sent to the Senate Committee on Interstate and Foreign Commerce a bill embodying his ideas of the legislation needed for the control of large industrial corporations carrying on interstate business. It provides for the establishment of a board to be known as the Corporation Commission, consisting of three men appointed by the President. Their orders shall be subject to review by the Court of Commerce or any Federal District Court. They shall have jurisdiction over all interstate corporations, other than common carriers, having a capitalization or proposed capitalization of \$10,000,000 or more, though smaller corporations by conforming to the requirements may take out "certificates of license" and become thereafter subject to the terms of the bill. None of the

corporations referred to by the bill shall do a banking business.

It is provided that no corporation licensed by the bill and whose business constitutes, according to the estimate of the commission, more than 50 per cent. of the total business of the same character in the United States shall purchase the property and business of any other corporation or person engaged in a similar competitive business in the United States unless the said purchasing corporation shall first apply to the Corporation Commission. And the commission is to determine whether such purchase would tend to create a monopoly or unduly to restrain trade, and if so to refuse permission to purchase.

Forfeiture of license is provided as the penalty in case any corporation "shall enter into any contract or combination or engage in any conspiracy in restraint of trade and commerce among the several states, or with foreign nations, or shall monopolize or attempt to monopolize any part thereof, or shall engage in any oppressive methods of competition for the purpose of obtaining a monopoly of said interstate commerce" contrary to the Sherman Act.

The commission is given power to order a corporation to desist from any violation of the bill or of the Sherman Act under penalty of forfeiture of license.

The section of the bill which has been most criticised is the following, which provides for the fixing of maximum prices in an industry:

Any corporation licensed hereunder may apply to the commission at any time for a determination as to whether or not any proposed action of such license would unduly restrain trade or commerce or create a monopoly, and the commission shall thereupon investigate and make an order allowing or prohibiting such proposed action, and any action taken by any corporation pursuant to such order shall be lawful, but such order, as to its future operation, shall be subject to revocation upon notice. In connection with any order allowing such proposed action and as a condition of granting the same, the commission may fix the maximum prices of any products with reference to which the order is made, if in the judgment of the commission the fixing of such prices shall be necessary to prevent a monopoly or an undue restraint of trade or commerce; and the prices so fixed shall govern the said licensee so long as the order is in force.

New York Meeting of the Testing Society

Announcement is made of the fifteenth annual meeting of the American Society for Testing Materials, which will be held in New York City Thursday and Friday, March 28 and 29. Morning and afternoon sessions will be held on both days at the Hotel Astor, which will be headquarters. It is expected that about 20 partly revised or new specifications will be presented for adoption by the society. Reports will be made on magnetic testing of iron and steel, on tempering and testing of steel springs and standard specifications for spring steel, on hardness tests and on non-ferrous metals and alloys. Of special interest to the iron trade will be the reports on specifications for coke, for steel, for wrought iron, for cold drawn steel and for cast iron and finished castings. No papers will be presented, in view of the meeting of the International Association in September.

Amendments to the by-laws will be presented providing for a new class of honorary members, for rotation in office and in membership on the Executive Committee and for minor changes in the composition of the Executive Committee.

The Committee on Nominations has reported the following nominations: President, Robert W. Hunt; vice-president, A. W. Gibbs; secretary-treasurer, Edgar Marburg; members of Executive Committee, J. B. Lober, A. A. Stevenson and S. W. Stratton.

The Duplex Metals Company, Chester, Pa., manufacturer of copper-clad steel wire, has just installed a plate mill and is now prepared to turn out copper-clad steel sheets, strips, plates and small structural shapes, besides nails and staples of all kinds and sizes.

The Toledo Shipbuilding Company, Toledo, Ohio, has just closed a contract with a New York concern, whose name is withheld, for the building of two boats to be used in the Atlantic coast trade. One is to be delivered in August and the other in October.

The Otis Steel Company's Extensions

A London cablegram states that arrangements have been made for vesting the property of the Otis Steel Company, Cleveland, Ohio, in an American company, which will have a capitalization of \$50,000,000 in \$500 shares, half preferred and half common. The purchase price is £2,764,900 in preferred stock and £4,156,300 in common stock. As announced some time ago, an Ohio corporation will be formed, and it is expected important new construction will be undertaken. The cablegram, says: "The whole of the debenture stock of the English company will be paid off preferred and common stock, but of the purchase price the balance of £1,650,000 preferred and £3,877,500 common stock as a fund in part for special remuneration to the dividends will be distributed among its members. The American company agrees to apply £843,700 of the common stock as a fund in part for special remuneration to the present officers and employees of the English company and in part to provide an interest in the business to the directors."

General details of the scope of the plant extensions proposed by the Otis Steel Company have been made known in the past few days by the application of the company to Colonel Millis, the Government engineer at Cleveland, for permission to fill in land along the lake front adjoining its plant to furnish a site for the new work. Plans filed with the Government engineer show three blast furnaces, 12 open-hearth furnaces and a blooming and a continuous mill. A dock would be built along the outer line of the proposed site from which ore would be unloaded directly into the yard adjoining the blast furnaces. According to the proposed plans the fill would extend out in the lake about 1600 ft., and would provide a site of about 1500 ft. x 1500 ft., or 50 acres. If authority is not secured for making this site the company will probably select a site in another section of the city.

Eastern Bar Makers in Tariff Conference

Bar iron manufacturers in the territory running from Portland, Me., to Richmond, Va., gathered in an informal meeting at the Bellevue-Stratford Hotel, Philadelphia, Pa., February 23, to formulate a plan to take action against the proposed reduction in the tariff on bars as provided under the Underwood tariff bill. The lowered duty would admit of the importation of foreign made bars and decrease the business of the Atlantic seaboard mills. A committee was appointed to gather the necessary data and prepare a brief protesting against the proposed reduction, to be presented and supported by a large delegation of manufacturers before the Senate Finance Committee at a date agreeable to that committee.

Dixon's Graphite Motor Lubricants.—The March issue of Graphite, published by the Joseph Dixon Crucible Company, Jersey City, N. J., will present a remarkable testimonial to the efficiency of Dixon's graphite motor lubricants from the driver of the winning car in a recent famous race. He expresses his conviction that the great speed maintained "was due to the use of graphite lubricants, reducing the friction and increasing the efficiency of the engine thereby."

Bruce & Cook, dealers in sheets and metals, 186 to 190 Water street, New York, on the evening of February 20 celebrated the one hundredth anniversary of the founding of the house by John M. Bruce in 1812. A dinner was given which was attended by the heads of the firm and every employee, including drivers and porters, 74 in all. Only one guest outside of the firm was present, Rev. James M. Bruce, a descendant of the founder. The present members of the firm are P. R. Jennings, F. C. Jennings, A. G. Cooper and A. C. Pieper.

The statement of the American Railway Association for February 13 showed a net car surplus of 13,958, the smallest number since October, 1910. The decline between January 31 and February 14 was 18,623. On January 3 the number of idle cars was 135,938. To a considerable extent the decrease in surplus cars is due to the cold weather, with its interference with the freight movement.

The Iron and Metal Markets

High Rate of Mill Operations But No Improvement in New Business Inquiry for Reinforcing Bars—Cast Iron Pipe Active—Pig Iron Very Quiet

The finished steel trade is still hopeful that the advance of the active season will bring a material increase in business, but has found no evidence of such improvement in the past week. Until pig iron shows more signs of life expectations of widespread betterment in the industry are not likely to be realized.

The encouraging feature of the situation is that the mills have kept up so high a rate of operation, with all the handicaps of severe cold and of freight blockades in February. In the Central West and in the Chicago district a 90 per cent. operation is now carried on, but Eastern works still fall considerably short of this. Chicago mills are now less able to make quick shipment than those at Pittsburgh—a reversal of conditions a few weeks back.

It is understood that considerable rail business has been closed in the past week with Southern and Western lines, but the details of tonnages have not yet been announced. Awards by the Wabash on 2950 cars and by the Western Maryland on 2750 cars are expected soon. The Bessemer & Lake Erie is dividing 1500 steel hoppers and gondolas and 500 box cars between two Pittsburgh interests. The placing of the St. Paul order for 1000 steel ballast cars is deferred. The New York Central has bought 20 locomotives and the Rock Island 40.

At Pittsburgh announcement has been made by the Carnegie Steel Company that 1.15c. is its minimum price on plates and structural shapes. There are variations of \$1 a ton from this price, however, in recent sales, and some Eastern structural contracts have pointed to a basis for plain material not far from 1 cent a pound. New York City has contributed very largely to the February total in structural lines. The United Electric power house, 14,000 tons, has been taken by the American Bridge Company.

Chicago district plate mills are far behind in deliveries and those at Pittsburgh, while less crowded, are also well occupied with steel car business. Eastern plate mills must look for improvement to increased shipyard activity, but on ship plates also Pittsburgh competition is still keen. An unconfirmed report gives two additional steamers for the Pacific trade, calling for 15,000 tons of steel each, to an Eastern yard.

The nearness of the time of active demand for reinforcing bars has brought out some good inquiry. The Pennsylvania Railroad will use 3800 tons for concrete bridges over the Bush and Gunpowder rivers in Maryland. Alternate plans of the Lackawanna Road for bridge work at Scranton involve 15,000 tons of structural steel and plates in one case and 2400 tons of reinforcing bars in the other.

Renewed buying of semi-finished steel is looked for

in March on the expiration of a number of contracts. The new open hearth capacity recently started in the Pittsburgh district promises sharper competition in slabs, billets and sheet bars.

The cast iron pipe trade continues to give a good account of itself. In New York City the Department of Water Supply will open bids March 6 for 6000 tons of pipe, chiefly 12-in. and 16-in. St. Louis is taking bids on 3000 tons this week and in 60 days will want an additional 8000 tons. Kansas City is about to buy 2200 tons.

The pig iron market is flat and uninteresting. A pipe maker in the East is inquiring for 5000 tons; in the Birmingham district export inquiry has come up for 6500 to 7000 tons of foundry grades, and in a few cases as much as 1500 tons of foundry iron is being figured on in the Central West. Southern makers are now better able to get \$10.25 for No. 2 foundry and some of them ask \$10.50 for second quarter iron. Neither buyer nor seller is interested in third quarter business in view of accumulating uncertainties.

At Pittsburgh inquiry for 10,000 tons of basic iron for March delivery has come up from an interest that recently bought through a dealer similar amounts for January and February.

While the midwinter scarcity of coke is less troublesome another factor has figured in that market—the accumulation of coke by some interests against the possibility of a coal strike. A considerable sale of furnace coke has been made at \$1.85 at oven, while foundry coke has sold as high as \$2.40. Some standard cokes have sold, however, at \$1.75 for furnace and \$2.25 for foundry.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type,
Declines in Italics.

At date, one week, one month and one year previous.

Pig Iron, Per Gross Ton:	Feb. 28, 1912.	Feb. 21, 1912.	Jan. 24, 1912.	Feb. 28, 1911.
Foundry No. 2 standard, Philadelphia	\$14.85	\$14.85	\$14.85	\$15.50
Foundry No. 2, Valley furnace	13.00	13.00	13.00	13.75
Foundry No. 2 Southern, Cincinnati	13.50	13.25	13.25	14.25
Foundry No. 2, Birmingham, Ala.	10.25	10.00	10.00	11.00
Foundry No. 2, at furnace, Chicago*	14.00	14.00	14.00	15.50
Basic, delivered, eastern Pa.	14.25	14.25	14.25	15.00
Basic, Valley furnace	12.25	12.25	12.25	13.75
Bessemer, Pittsburgh	14.90	14.90	14.90	15.90
Gray forge, Pittsburgh	13.40	13.40	13.40	14.40
Lake Superior charcoal, Chicago	15.75	16.00	16.00	17.50

Billets, etc., Per Gross Ton:	Feb. 28, 1912.	Feb. 21, 1912.	Jan. 24, 1912.	Feb. 28, 1911.
Bessemer billets, Pittsburgh	20.00	20.00	20.00	23.00
Open hearth billets, Pittsburgh	20.00	20.00	20.00	23.00
Forging billets, Pittsburgh	26.50	28.00	28.00	28.00
Open hearth billets, Philadelphia	22.40	22.40	22.40	25.40
Wire rods, Pittsburgh	25.00	25.00	24.50	29.00

Old Material, Per Gross Ton:	Feb. 28, 1912.	Feb. 21, 1912.	Jan. 24, 1912.	Feb. 28, 1911.
Iron rails, Chicago	15.00	15.00	15.00	15.50
Iron rails, Philadelphia	15.50	15.50	16.50	18.50
Car wheels, Chicago	13.00	13.00	13.25	13.25
Car wheels, Philadelphia	12.00	12.00	12.00	14.00
Heavy steel scrap, Pittsburgh	12.00	12.00	12.75	14.75
Heavy steel scrap, Chicago	10.50	10.50	10.50	12.00
Heavy steel scrap, Philadelphia	11.75	11.75	12.00	14.50

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

Finished Iron and Steel,	Feb. 28, 1912.	Feb. 21, 1912.	Jan. 24, 1912.	Feb. 28, 1911.
Per Pound to Largest Buyers:	Cents.	Cents.	Cents.	Cents.
Bessemer rails, heavy, at mill...	1.25	1.25	1.25	1.25
Iron bars, Philadelphia.....	1.25	1.25	1.27½	1.37½
Iron bars, Chicago.....	1.25	1.25	1.25	1.35
Iron bars, Pittsburgh.....	1.15	1.15	1.15	1.27½
Steel bars, Pittsburgh.....	1.10	1.10	1.15	1.40
Steel bars, tidewater, New York	1.26	1.26	1.31	1.56
Tank plates, Pittsburgh.....	1.10	1.10	1.15	1.40
Tank plates, tidewater, New York	1.26	1.26	1.31	1.56
Beams, Pittsburgh.....	1.10	1.10	1.15	1.40
Beams, tidewater, New York...	1.26	1.26	1.31	1.56
Angles, Pittsburgh.....	1.10	1.10	1.15	1.40
Angles, tidewater, New York...	1.26	1.26	1.31	1.56
Skelp, grooved steel, Pittsburgh.	1.10	1.12½	1.12½	1.30
Skelp, sheared steel, Pittsburgh.	1.15	1.20	1.20	1.35

Sheets, Nails and Wire,

Per Pound to Largest Buyers:

Sheets, black, No. 28, Pittsburgh	1.85	1.85	1.90	2.20
Wire nails, Pittsburgh.....	1.60	1.60	1.60	1.75
Cut nails, Pittsburgh.....	1.55	1.55	1.55	1.60
Fence wire, ann'led, 0 to 9, P'gh.	1.40	1.40	1.40	1.55
Barb wire, galv., Pittsburgh...	1.90	1.90	1.90	2.05

Coke, Connellsville,

Per Net Ton, at Oven:

Furnace coke, prompt shipment...	1.80	1.75	1.75	1.50
Furnace coke, future delivery...	1.80	1.80	1.70	1.70
Foundry coke, prompt shipment...	2.25	2.10	2.00	2.10
Foundry coke, future delivery...	2.25	2.25	2.10	2.25

Metals,

Per Pound:

Lake copper, New York.....	14.50	14.50	14.50	12.75
Electrolytic copper, New York...	14.37½	14.37½	14.25	12.37½
Spelter, St. Louis.....	6.75	6.55	6.40	5.55
Spelter, New York.....	6.60	6.70	6.55	5.70
Lead, St. Louis.....	3.92½	3.95	4.37½	4.25
Lead, New York.....	4.00	4.00	4.45	4.40
Tin, New York.....	43.37½	42.87½	42.87½	42.25
Antimony, Hallett, New York...	7.37½	7.37½	7.55	9.25
Tin plate, 100 lb. box, New York	\$3.54	\$3.54	\$3.64	\$3.94

Prices of Finished Iron and Steel f.o.b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb., New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c.; Pacific Coast, 80c. on plates, structural shapes and sheets No. 11 and heavier; 85c. on sheets Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

Plates.—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.10c., base, net cash, 30 days. Following are stipulations prescribed by manufacturers, with extras:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼ in. and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼ in. thick on edge, or not less than 11 lb. per square foot, to take base price. Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. take the price of 3-16 in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Extras,

Cents per lb.

Gauges under ¼ in. to and including 3-16 in. on thinnest edge	.10
Gauges under 3-16 in. to and including No. 8.....	.15
Gauges under No. 8 to and including No. 9.....	.25
Gauges under No. 9 to and including No. 10.....	.30
Gauges under No. 10 to and including No. 12.....	.40
Sketches (including all straight taper plates) 3 ft. and over in length	.10
Complete circles, 3 ft. in diameter and over.....	.20
Boiler and flange steel	.10
"A. B. M. A." and ordinary firebox steel.....	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Widths over 100 in. up to 110 in., inclusive.....	.05
Widths over 110 in. up to 115 in., inclusive.....	.10
Widths over 115 in. up to 120 in., inclusive.....	.15
Widths over 120 in. up to 125 in., inclusive.....	.25
Widths over 125 in. up to 130 in., inclusive.....	.30
Widths over 130 in.	1.00
Cutting to lengths or diameters under 3 ft. to 2 ft., inclusive	.25
Cutting to lengths or diameters under 2 ft. to 1 ft., inclusive	.50
Cutting to lengths or diameters under 1 ft.	1.35
No charge for cutting rectangular plates to lengths 3 ft. and over.	

Wire Rods and Wire.—Bessemer, open hearth and chain rods, \$25. Fence wire, Nos. 0 to 9, per 100 lb., terms 60 days, or 2 per cent. discount in 10 days, carload lots, to jobbers, annealed, \$1.40; galvanized, \$1.70. Carload lots to retailers, annealed, \$1.50; galvanized, \$1.80. Galvanized barb wire to jobbers, \$1.90; painted, \$1.60. Wire nails, to jobbers, \$1.60.

The following table gives the prices to retail mer-

chants on wire in less than carloads, including the extras on Nos. 10 to 16, which are added to the base price:

	Fence Wire, Per 100 Lb.					
Nos.	0 to 9	10	11	12 & 12½	13	14
Annealed	\$1.55	\$1.60	\$1.65	\$1.70	\$1.80	\$1.90
Galvanized	1.85	1.90	1.95	2.00	2.10	2.20

Structural Material.—I-beams, 3 to 15 in.; channels, 3 to 15 in., and angles, 3 to 6 in. on one or both legs, ¼ in. and over, 1.10c. Other shapes and sizes are quoted as follows:

	Cents per lb.
I-beams over 15 in.	1.15 to 1.20
H-beams over 18 in.	1.15 to 1.20
Angles over 6 in.	1.15 to 1.20
Angles, 3 in. on one or both legs, less than ¼ in. thick, plus full extras, as per steel bar card Sept. 1, 1909.....	1.15 to 1.20
Tees, 3 in. and up.....	1.15 to 1.20
Zees, 3 in. and up.....	1.10 to 1.15
Angles, channels and tees, under 3 in., plus full extras as per steel bar card Sept. 1, 1909.....	1.15 to 1.20
Deck beams and bulb angles.....	1.40 to 1.45
Hand rail tees.....	1.95 to 2.10
Checkered and corrugated plates.....	1.95 to 2.10

Sheets.—Makers' prices for mill shipments on sheets of U. S. Standard gauge, in carload and larger lots, on which jobbers charge the usual advances for small lots from store, are as follows:

Blue Annealed Sheets.

Nos.	Cents per lb.
Nos. 3 to 8.....	1.25 to 1.30
Nos. 9 and 10.....	1.35 to 1.40
Nos. 11 and 12.....	1.40 to 1.45
Nos. 13 and 14.....	1.45 to 1.50
Nos. 15 and 16.....	1.55 to 1.60

Box Annealed Sheets, Cold Rolled.

Nos.	One Pass.	Three Pass.
Nos. 10 to 12.....	1.50 to 1.55	1.25 to 1.30
Nos. 13 and 14.....	1.55 to 1.60	1.35 to 1.40
Nos. 15 and 16.....	1.60 to 1.65	1.40 to 1.45
Nos. 17 to 21.....	1.65 to 1.70	1.45 to 1.50
Nos. 22, 23 and 24.....	1.70 to 1.75	1.50 to 1.55
Nos. 25 and 26.....	1.75 to 1.80	1.55 to 1.60
No. 27.....	1.80 to 1.85	1.60 to 1.65
No. 28.....	1.85 to 1.90	1.65 to 1.70
No. 29.....	1.90 to 1.95	1.70 to 1.75
No. 30.....	2.00 to 2.05	1.75 to 1.80

Galvanized Sheets of Black Sheet Gauge.

Nos.	1.85 to 1.90
Nos. 10 and 11.....	1.85 to 1.90
Nos. 12, 13 and 14.....	1.95 to 2.00
Nos. 15, 16 and 17.....	2.10 to 2.15
Nos. 18 to 22.....	2.25 to 2.30
Nos. 23 and 24.....	2.35 to 2.40
Nos. 25 and 26.....	2.55 to 2.60
No. 27.....	2.70 to 2.75
No. 28.....	2.85 to 2.90
No. 29.....	2.95 to 3.00
No. 30.....	3.15 to 3.20

All above rates on sheets are f.o.b. Pittsburgh, terms 30 days net, or 2 per cent. cash discount in 10 days from date of invoice, as also are the following base prices per square for painted and galvanized roofing sheets, with 2½-in. corrugations:

Corrugated Roofing Sheets Per Square.

Gauge.	Painted.	Galvanized.	Gauge.	Painted.	Galvanized.
28.....	\$2.20	\$2.25	23.....	\$2.25	\$3.35
29.....	2.45	2.45	24.....	2.40	3.50
25.....	1.50	2.50	21.....	2.60	3.85
26.....	1.50	2.55	20.....	2.85	4.15
25.....	1.70	2.90	18.....	3.80	5.40
24.....	1.95	3.00	16.....	4.55	6.25

Wrought Pipe.—The following are the jobbers' carload discounts on the Pittsburgh basing card on wrought pipe, in effect from December 1, 1911:

Butt Weld.

	Steel	Black.	Galv.
¾ and ¾ in.	74	34	68
¾ in.	75	65	69
¾ in.	78	68	72
¾ to 1½ in.	81	72	75
2 to 3 in.	82	75	76

Lap Weld.

	Steel	Black.	Galv.
1½ and 1½ in.	79	72	68
2 in.	81	74	72
2½ to 4 in.	80	72	73
4½ to 6 in.	78	68	71
7 to 12 in.	55	..	47

Butt Weld, extra strong, plain ends, card weight.

	Steel	Black.	Galv.
¾, ¾, ¾ in.	70	60	65
¾ in.	75	69	70
¾ to 1½ in.	79	73	74
2 to 3 in.	80	74	75

Lap Weld, extra strong, plain ends, card weight.

	Steel	Black.	Galv.
1½ in.	76	70	71
2 in.	78	72	73
2½ to 4 in.	77	71	72
4½ to 6 in.	70	60	65
7 to 12 in.	65	55	60

Butt Weld, double extra strong, plain ends, card weight.

	Steel	Black.	Galv.
¾ in.	65	59	60
¾ to 1½ in.	68	62	63
2 to 3 in.	70	64	65

Lap Weld, double extra strong, plain ends, card weight.			
2 in.	66	60	61
2 1/2 to 4 in.	68	62	63
4 1/2 to 6 in.	67	61	62
7 to 8 in.	60	50	55

Plugged and Reamed.

1 to 1 1/2, 2 to 3 in. Butt Weld	{ Will be sold at two (2) points lower basing (higher price) than merchants' or card weight pipe. Butt or lap weld as specified.
2, 2 1/2 to 4 in. Lap Weld	

The above discounts are for "card weight," subject to the usual variation of 5 per cent. Prices for less than carloads are three (3) points lower basing (higher price) than the above discounts.

Boiler Tubes.—Discounts on lap welded steel and standard charcoal iron boiler tubes to jobbers in carloads are as follows:

Steel.	Standard Charcoal Iron.
1 1/4 to 2 1/4 in.	65
2 1/2 in.	67 1/2
2 3/4 to 3 1/4 in.	72 1/2
3 1/2 to 4 in.	75
5 to 6 in.	67 1/2
7 to 13 in.	65

2 1/2 in. and smaller, over 18 ft., 10 per cent. net extra.

2 1/2 in. and larger, over 22 ft., 10 per cent. net extra.

Less than carloads will be sold at the delivered discounts for carloads, lowered by two points for lengths 22 ft. and under to destinations east of the Mississippi River; lengths over 22 ft. and all shipments going west of the Mississippi River must be sold f. o. b. mill at Pittsburgh basing discount, lowered by two points.

Pittsburgh

PITTSBURGH, PA., February 27, 1912.

Nothing of an encouraging nature in the local iron trade has developed, except that a few of the leading steel companies report that specifications have shown some improvement and a heavier increase is confidently expected early in March. The leading interest has sent out notices to the trade that its minimum price on plates and plain structural material is now 1.15c. at mill. The advance in prices of plates, structural material and steel bars made some time ago resulted in the demand falling off and prices receding to the lowest point. The amount of new buying of finished iron and steel is relatively small, consumers evidently lacking faith in the future and being disposed for the time being to confine purchases to actual needs. Probably the two most active items on the whole list are foundry coke and billets and sheet bars, for which the demand is quite urgent. A continuation of mild weather is expected to bring about an increase in new business. The shortage in box cars continues, and freight is not being moved by the railroads in a way that is satisfactory to shippers. This trouble will probably be overcome in the near future, but it is causing a good deal of inconvenience while it lasts.

Pig Iron.—The inquiry of the Westinghouse Electric & Mfg. Company for a large tonnage of foundry iron for delivery in the last half of the year is still in the market, but it is doubtful if it will be closed in the near future. The demand for foundry iron is mostly for small lots to cover current needs. Stocks of iron carried by consumers are light, and this is shown by the fact that in the past two weeks furnaces have been importuned for deliveries which they are unable to make promptly on account of the poor service the railroads are giving. We note a sale of 150 tons of basic iron for March delivery by a broker at \$12.40 and 200 tons of Northern No. 2 foundry iron for the same delivery at \$13, both at Valley furnace. The market is only fairly strong, and if any large tonnage were offered by consumers current prices would no doubt be shaded. We quote: Bessemer iron, \$14; No. 2 foundry, \$13 to \$13.25; malleable Bessemer, \$12.75 to \$13; basic, \$12.25 to \$12.50, and Northern forge, \$12.50, all at Valley furnace, the freight rate to the Pittsburgh district being 90c. a ton. A local interest that supplied the Pittsburgh Steel Company with about 10,000 tons of basic iron for January and the same amount for February has inquiries out for about 10,000 tons for March delivery to be furnished to the same consumer. Nearly all furnaces are now quoting \$12.50 on basic iron.

Steel Billets and Sheet Bars.—The Jones & Laughlin Steel Company is now operating its two-high 40-in. blooming mill at its Aliquippa, Pa., works and is rolling billets, sheet bars and slabs up to 36 in. wide. The company is now an active seller of billets and sheet bars. As yet consumers have not made contracts for their supply for second quarter, but it is probable that early in March a good deal of tonnage will be placed. We quote: Bessemer and open-hearth billets, 4 x 4 in., up to 0.25 carbon, \$20; Bessemer and open-hearth sheet and tin plate bars, \$20.50 to \$21, and forging billets, \$28,

all f.o.b. Pittsburgh. Prices of billets at Youngstown are about \$19.50 and sheet bars \$20 to \$20.50, f.o.b. at mill.

Ferromanganese.—There is an active new inquiry for small lots for prompt shipment. Four or five local consumers have been trying for several days to pick up a carload or two each for prompt delivery, but so far have not been able to get it. The situation has been aggravated by the sinking of a boat coming over the Atlantic with 2000 tons. Prices are firm at \$41, Baltimore, the freight rate to Pittsburgh being \$1.95 a ton.

Ferrosilicon.—There is a fair amount of new inquiry for small lots for prompt shipment, and prices are firm. We note sales of four cars, or about 100 tons, of 50 per cent. at the full price of \$70 delivered. We quote 50 per cent. in lots up to 100 tons at \$70; over 100 tons to 600 tons, \$69, and over 600 tons, \$68, Pittsburgh. The lower grades are ruling at about \$20 for 10 per cent.; \$21 for 11 per cent.; \$22 for 12 per cent., f.o.b. cars at furnace, Ashland, Ky., or Jackson, Ohio.

Muck Bar.—The local market is very dull, and no sales have been made to fix prices. We quote best grades, made from all pig iron, at \$28, Pittsburgh.

Wire Rods.—Most consumers are covered by contracts made some time ago when prices were lower, on which specifications are coming in quite well. We note a sale of 200 tons of open-hearth chain rods for March and April delivery at \$25, Pittsburgh.

Skelp.—The market is quiet, inquiries being very light, and prices are weaker. We quote grooved steel skelp at 1.10c. to 1.12 1/2c.; sheared steel skelp, 1.15c. to 1.20c.; grooved iron skelp, 1.40c. to 1.45c. and sheared iron skelp, 1.55c. to 1.60c., all for delivery at buyer's mill in the Pittsburgh district.

Steel Rails.—No important orders for standard sections have been placed, but there is a fair amount of buying by the smaller railroads. The Carnegie Steel Company is receiving some very nice orders for Standard sections for export, and, in fact, a good part of the tonnage being rolled at its Edgar Thomson mills is export business. Light rails are fairly active, the same company having received in the past week new orders and specifications for about 3000 tons, also a contract from the Pennsylvania Lines West for their entire requirements of splice bars for this year's delivery. We quote splice bars at 1.50c. per lb., and repeat quotations on rails: Standard sections, 1.25c. per lb.; 8 and 10-lb. light rails, 1.25c.; 12 and 14-lb., 1.16c.; 16, 20 and 25-lb., 1.12c.; 30 and 35-lb., 1.10c., and 40 and 45-lb., 1.08c., f.o.b. at mill.

Plates.—In the next two or three days the Bessemer & Lake Erie Railroad will divide an order between two local interests for 1500 steel hoppers and gondolas and 500 box cars. The inquiry of the Wabash Railroad for 2950 cars is now being figured on and these and 2750 cars for the Western Maryland are likely to be placed soon. The Jones & Laughlin Steel Company can roll slabs up to 36 in. wide on its two-high reversing blooming mill at Aliquippa, and this will enable the company to roll universal mill plates up to that width on its plate mills at its South Side works in this city. The widest universal plates formerly furnished by the company were 30 in. We continue to quote 1/4-in. and the heavier plates at 1.10c. on very desirable orders and 1.15c. on small lots f.o.b. at mill, Pittsburgh. We note, however, that the Carnegie Steel Company is now holding plates 1/4 in. and heavier at 1.15c. minimum.

Sheets.—A fair amount of new business in black and galvanized sheets is being placed, but orders for roofing sheets have been dull for some time on account of the extremely cold weather. Makers state that specifications against contracts for black and galvanized sheets in February were about as heavy as in January, and shipments last month and this month have been very heavy. Prices continue weak in spite of the fact that most of the larger mills are operating close to 90 per cent. of capacity. The competition for the relatively small amount of new business that is coming up is keen, and No. 28 black sheets are being quoted at 1.85c. and in some cases 1.80c. is done. No. 28 galvanized sheets are held at 2.85c., but in exceptional cases sales have been made at 2.80c.

Structural Material.—In the past week no important jobs have been placed. A new hotel project is on foot in this city to supplant the Monongahela House, and if it goes through it will require 6000 to 8000 tons of steel. We continue to quote beams and channels up to 15 in. at 1.10c. to 1.15c., f.o.b. Pittsburgh.

Tin Plate.—Demand for tin plate is dull, as it always is at this season, but specifications against contracts continue to come in at a fairly heavy rate. In regard

to the much talked of contract for re-export tin plate of the Standard Oil Company, we can state that the original purchases were 165,000 boxes, about 40,000 boxes of this going to the Phillips Sheet & Tin Plate Company, while the balance went to the leading interest. The leading mills are now operating at about 90 per cent. of capacity, while one or two mills are running practically full. The tin-plate makers anticipate heavy specifications from the can makers to start early in March. We quote 14 x 20 coke plates at \$3.25 to \$3.40 on the small orders that are being placed.

Iron and Steel Bars.—Specifications against contracts are coming in at a fairly satisfactory rate, but new demand for both iron and steel bars is only for small lots. A heavy increase in the tonnage of steel bars for concrete reinforcing purposes is expected to come early in March, the demand for bars for this class of work having been quiet for some time. We quote steel bars at 1.10c. to 1.15c. for delivery over the next two or three months and iron bars at 1.25c. f.o.b., mill Pittsburgh.

Hoops and Bands.—Mills report that specifications against contracts for hoops are coming in at a more satisfactory rate from the cooperage interests, but new demand is quiet both for bands and hoops, with prices ruling fairly steady. We quote steel bands at 1.10c., with extras as per the steel bar card, and hoops at 1.25c., f.o.b. Pittsburgh.

Rivets.—A fair amount of business is being placed, but mostly in small lots to cover current needs. Makers report that specifications against contracts are not coming in as they would like. We quote structural rivets at 1.45c. to 1.50c. and boiler rivets at 1.55c. to 1.60c., prices depending on the desirability of the order.

Shafting.—The demand is dull and prices are unsettled. Specifications from the automobile builders and the implement makers against contracts are coming in reasonably well. We quote cold-rolled shafting at 67 per cent. off in carload and larger lots and 62 per cent. off in small lots, delivered in base territory.

Railroad Spikes.—New buying is light and confined to small lots. We quote base sizes at \$1.35 to \$1.40 per 100 lb. in carload and larger lots, prices depending on the size and desirability of the order.

Spelter.—The market is irregular, with demand quiet. We quote prime grades of Western spelter for prompt delivery at 6.75c., East St. Louis, equal to 6.87½c., Pittsburgh.

Wire Products.—The new demand for wire and wire nails is only for small lots, but specifications against contracts are coming in quite freely. A heavy increase in demand is expected as soon as spring trade opens. Jobbers are being urged by the mills to send in specifications as early as possible, owing to the delays in deliveries by the railroads, due to shortage in supply of box cars. We quote wire nails at \$1.60; cut nails, \$1.55; galvanized barb wire, \$1.90; painted, \$1.60; annealed fence wire, \$1.40, and galvanized fence wire, \$1.70, f.o.b. Pittsburgh, usual terms, freight added to point of delivery.

Merchant Pipe.—The Ohio Fuel Supply Company of this city is said to be figuring on the purchase of 40 to 60 miles of 12-in. steel line pipe in addition to a previous inquiry sent out for 15 miles of 16-in. The demand for merchant pipe holds up remarkably well for the season, orders booked in February being reported as considerably in excess of the same month last year. While some low prices continue to be made on line pipe, the extremely low quotations made some time ago by several of the leading mills have been withdrawn. Some large projects for gas and oil lines are being figured. Regular discounts on merchant sizes of iron and steel pipe are being fairly well held.

Boiler Tubes.—Liberal specifications continue to be received by the mills on contracts for boiler tubes. Some large orders for locomotives are expected to be placed soon, and considerable new business in boiler tubes is expected as a result. The new demand for merchant tubes is quiet, and prices are more or less shaded.

Iron and Steel Scrap.—The local market is stagnant, and consumers are not disposed to take in material even at the very low prices that are ruling. On the other hand, dealers are not willing to make further reductions in prices but are inclined to hold their scrap in the belief that the market will shortly be better. The scrap list of the Pennsylvania Railroad was issued under date of February 26 and is the heaviest it has sent out for some time. Bids close March 5. We note a sale of 800 tons of heavy steel scrap at \$12 delivered at Sharon, and 300 tons of cast iron borings at about \$9 delivered. Dealers quote as follows, per gross ton, f.o.b. Pittsburgh, unless otherwise noted:

Heavy steel scrap, Steubenville, Follansbee, Brackenridge, Sharon, Monessen and Pittsburgh delivery	\$12.00 to \$12.50
No. 1 foundry cast	12.25 to 12.50
No. 2 foundry cast	10.25 to 10.50
Bundled sheet scrap, f.o.b. consumers' mill, Pittsburgh district	10.75 to 11.00
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., and Franklin, Pa. ..	12.75 to 13.00
No. 1 railroad malleable stock	11.25 to 11.50
Grate bars	9.00 to 9.25
Low phosphorus melting stock	15.00 to 15.25
Iron car axles	20.50 to 21.00
Steel car axles	16.00 to 16.25
Locomotive axle	22.00 to 22.50
No. 1 busheling scrap	11.00 to 11.25
No. 2 busheling scrap	7.00 to 7.25
Old car wheels	12.00 to 12.25
*Cast iron borings	9.00 to 9.25
*Machine shop turnings	9.50 to 9.75
†Sheet bar crop ends	13.75 to 14.00
Old iron rails	14.50 to 14.75
No. 1 wrought scrap	12.50 to 12.75
Heavy steel axle turnings	9.75 to 10.00
Stove plate	9.00 to 9.25

*These prices are f.o.b. cars at consumers' mills in the Pittsburgh district.

†Shipping point.

Coke.—A continued active demand is experienced for foundry coke for prompt shipment. It is decidedly scarce. Three of the leading coke operators are now holding 72-hour coke of standard grades at \$2.40 minimum. The market on prompt furnace coke is also firmer, and a sale of about 10,000 tons has been made to an Eastern steel works at \$1.85 at oven. This price is probably a little above the market, and was obtainable only because the seller was in position to furnish the large tonnage needed. The output in the Upper and Lower Connellsville regions last week was 393,664 tons, an increase over the previous week of nearly 40,000 tons. We quote prompt furnace coke of standard grades at \$1.80 to \$1.85 and foundry \$2.15 to \$2.25, per net ton at oven. Standard furnace coke on contracts is held at \$1.75 to \$1.85 and 72-hour foundry at \$2.25 to \$2.40, per net ton at oven.

Chicago

CHICAGO, ILL., February 27, 1912.

The strength of the market lies almost entirely in the well sustained volume of specifications which mills in this district are receiving. On bars, structural shapes and plates deliveries are many weeks behind. There seems to have been a slight broadening of activity, but this encouraging feature has been offset by an increasing tendency to make concessions for desirable business. Eastern mills are in a much better position for the most part than the local mills in making deliveries, and as a result a larger amount of current business is being placed there from this territory. Some important rail tonnages are being negotiated and closed. A mild optimism regarding the outlook for the coming year is beginning to develop in the farming districts, evidences of which are apparent in the heavy demand for wire products for the spring trade. Car blockades and congested freight conditions, in part due to severe weather, are now an important factor in deliveries. In this locality the situation borders on a coke famine.

Pig Iron.—Sales of 1000 tons of local iron and of 2000 tons of Southern iron are the most conspicuous items noted among the sales of the past week. Several thousand tons of charcoal iron has been taken here recently. The Southern market is apparently well established on a basis of \$10.50 for No. 2, at Birmingham, while local iron remains at \$14, f.o.b. furnace, with insufficient activity prevailing to suggest a change in quotation in either direction. A limited amount of inquiry for shipment in the third quarter and last half is being received, but the general response to these advances is confined to the extension of second quarter deliveries into the third quarter. We quote for Chicago delivery, except for local irons, which are f.o.b. furnace, the following prices on prompt shipments:

Lake Superior charcoal	\$15.75 to \$16.50
Northern coke foundry, No. 1	14.50
Northern coke foundry, No. 2	14.00
Northern coke foundry, No. 3	13.50 to 14.00
Northern Scotch, No. 1	16.00
Southern coke, No. 1 foundry and No. 1 soft	15.35
Southern coke, No. 2 foundry and No. 2 soft	14.85
Southern coke, No. 3	14.35
Southern coke, No. 4	14.10
Southern gray forge	13.85
Southern mottled	13.85
Malleable Bessemer	14.00
Standard Bessemer	16.75
Basic	14.75
Jackson County and Kentucky silvery, 6 per cent.	16.40
Jackson County and Kentucky silvery, 8 per cent.	17.40
Jackson County and Kentucky silvery, 10 per cent.	18.40

Rails and Track Supplies.—Negotiations covering considerable rail tonnage affecting the mills in this district have been closed. Sales of various small lots are also reported. The specifying for track fastenings shows some increase, but rail joint requirements are light. We quote standard railroad spikes at 1.50c., base; track bolts, with square nuts, 1.90c., base, all in carload lots, Chicago; standard section Bessemer rails, 1.28c.; open hearth, 1.34c.; light rails, 40 to 45 lb., 1.16c. to 1.20c.; 30 to 35 lb., 1.10½c. to 1.24c.; 16, 20 and 25 lb., 1.20½c. to 1.25c.; 12 lb., 1.25c. to 1.30½c.; angle bars, 1.50c., Chicago.

Structural Material.—Structural shapes for car builders continue to make up the major portion of mill specifications. The demand for architectural purposes is still light and local fabricators are decidedly lacking in work, to which may be attributed the general prevalence of low prices for fabricated material. Concessions in quotations on plain shapes are likewise not entirely lacking. Contracts not previously noted and placed during the past week include 498 tons for an office building at Fresno, Cal., awarded to the McClintic-Marshall Construction Company; 259 tons for plate girder spans at Lake Minnetonka, Minneapolis, awarded to the Minneapolis Steel & Machinery Company; a bridge span in King County, Wash., 102 tons, to the American Bridge Company; bridge work for the Chicago, Milwaukee & Puget Sound Railway, 242 tons, to the Wisconsin Bridge & Iron Company; two truss spans for the St. Louis & Southwestern, 251 tons, to the Phoenix Bridge Company; Webster building, Chicago, 1600 tons, to A. Bolter's Sons. For plain material, we quote, mill shipment, Chicago delivery, 1.25c. to 1.33c., and from store, 1.60c.

Plates.—In this district mills are far behind their orders and local business requiring prompt shipment is being placed very generally with Eastern mills, whose rolling schedules are less congested. We quote for mill shipment, Chicago delivery, 1.25c. to 1.33c., and from store, 1.60c.

Sheets.—The sheet situation shows little inherent strength in the matter of prices, despite the continuance of a very fair tonnage on mill order books. To a great extent the desirable business is following the most favorable concession in quotation, and such weaknesses seem to be quite general. We quote Chicago prices as follows: Carload lots, from mill, No. 28 black sheets, 2.03c. to 2.08c.; No. 28 galvanized, 3.03c. to 3.08c.; No. 10 blue annealed, 1.53c. to 1.58c. Prices from store, Chicago, are: No. 10, 1.90c.; No. 12, 1.95c.; No. 28 black, 2.30c.; No. 28 galvanized, 3.35c.

Bars.—Car builders and agricultural implement manufacturers are specifying promptly and steadily for their requirements of bars, which demand is augmented by an important tonnage of steel for reinforced concrete construction. Bar iron tonnage shows an increase, but prices in both instances are without change. We quote as follows, f.o.b. Chicago: Soft steel bars, 1.25c. to 1.33c.; bar iron, 1.15c. to 1.20c.; hard steel bars, rolled from old rails, 1.15c. to 1.20c. From store: Soft steel bars, 1.50c. to 1.55c., Chicago.

Wire Products.—Heavy sales of wire products in various forms, particularly plain wire, wire nails and fencing, have been the rule for several weeks in anticipation of a strong spring trade. In certain districts where unprofitable seasons have been had for the past two years, the outlook for the approaching year is considered very favorable. We continue to quote as follows: Plain wire, No. 9 and coarser, base, \$1.58; wire nails, \$1.78; painted barb wire, \$1.78 to \$1.83, galvanized \$2.08; polished staples, \$1.83; galvanized, \$2.13, all Chicago.

Cast Iron Pipe.—The city of St. Louis, which is letting a contract this week for a little less than 3000 tons of pipe, contemplates entering the market for about 8000 tons within 60 days. Kansas City will require 2200 tons. The leading interest was awarded a contract for 1300 tons at Toledo, Ohio, in addition to which a number of smaller lettings were distributed among the various pipe makers. We quote as follows, per net ton, Chicago: Water pipe, 4-in., \$27; 6 to 12-in. \$25; 16-in. and up, \$24.50, with \$1 extra for gas pipe.

Old Material.—With trading in scrap during the past week exceedingly light, few occasions have arisen for establishing new values. At the going prices comparatively small quantities are offered for sale, while at the same time melters who are confining their purchases to what can be picked up at their own prices seem to be receiving sufficient material for their current needs. With the breaking up of winter weather and the subsequent influx of material naturally to be expected, it would seem that the consumptive demand

of melters must greatly increase to support the scrap market even at the level of current quotations. At the present time the tonnage of old material coming in is very limited, the only current railroad lists being about 2500 tons each from the Rock Island and the Burlington. We quote, for delivery at buyers' works, Chicago and vicinity, all freight and transfer charges paid, as follows.

Per Gross Ton.

Old iron rails	\$15.00 to \$15.50
Old steel rails, rerolling	12.50 to 13.00
Old steel rails, less than 3 ft.	11.75 to 12.25
Relaying rails, standard section, subject to inspection	24.00
Old car wheels	13.60 to 13.50
Heavy melting steel scrap	10.50 to 11.00
Frogs, switches and guards, cut apart	10.50 to 11.00
Shoveling steel	10.00 to 10.50
Steel axle turnings	8.50 to 9.00

Per Net Ton.

Iron angles and splice bars	\$12.50 to \$13.00
Iron arch bars and transoms	13.50 to 14.00
Steel angle bars	10.00 to 10.50
Iron car axles	17.75 to 18.25
Steel car axles	15.50 to 16.00
No. 1 railroad wrought	11.00 to 11.50
No. 2 railroad wrought	10.00 to 10.50
Steel knuckles and couplers	10.00 to 10.50
Steel springs	10.50 to 11.00
Locomotive tires, smooth	12.75 to 13.25
Machine shop turnings	6.50 to 7.00
Cast and mixed borings	6.25 to 6.75
No. 1 busheling	8.75 to 9.25
No. 2 busheling	6.25 to 6.75
No. 1 boilers, cut to sheets and rings	7.00 to 7.50
Boiler punchings	12.50 to 13.00
No. 1 cast scrap	11.00 to 11.50
Stove plate and light cast scrap	9.25 to 9.75
Railroad malleable	10.25 to 10.75
Agricultural malleable	9.00 to 9.50
Pipes and flues	8.00 to 8.50

Philadelphia

PHILADELPHIA, PA., February 27, 1912.

The market has been bare of any important general features. Transactions are, for the most part, confined to small and moderate lots, usually for early delivery. More inquiry for concrete bars is noted. Specifications on billet contracts are coming out freely. Both foundry and furnace coke for early shipment have been more active and prices show an advance. The old material market is at a standstill.

Iron Ore.—Little business is moving in either foreign or domestic ores. There were no arrivals of foreign ore at this port during the week.

Pig Iron.—Buying in the higher grades of foundry iron is still confined to small lots, covering consumers' early needs. Few inquiries develop for any large quantities, although occasionally one of a tentative nature for second half shipment is heard of, but given little consideration by producers. The cast iron pipe foundries are becoming more interested in the pig iron situation. One Delaware River interest has an inquiry out for 5000 tons of low grade iron for May-June delivery, while others are feeling the market. Several small lots of off grade irons have been sold to pipe makers in this district and a sale of 1000 tons to a Virginia pipe foundry is noted. A sale of 1000 tons of malleable foundry to a melter in this district is reported. Little new business is reported in rolling mill forge iron although some is pending. Steel making irons have not been particularly active. One lot of 2000 tons of basic iron for a central Pennsylvania consumer, which has been before the trade for several weeks, has been taken by a Lehigh Valley producer at about \$14.35, delivered. No further inquiries are now before the trade. There has been little movement in low phosphorus iron, small sales being reported at the market. The general range of pig iron prices continues unchanged. Consumers pay current prices for small lots. Standard brands for delivery in buyers' yards in this district are quoted as follows:

Eastern Pennsylvania No. 2 X foundry	\$14.85 to \$15.25
Eastern Pennsylvania No. 2 plain	14.60 to 15.00
Virginia foundry	15.00 to 15.50
Gray forge	14.25
Basic	14.25 to 14.50
Standard low phosphorus	19.00 to 19.25

Ferroalloys.—The demand is inactive. Carload lots represent the character of sales of 80 per cent. ferromanganese, at \$41, Baltimore. An inquiry for several hundred tons for an Eastern steel plant is still before the trade. There has been no movement in 50 per cent. ferrosilicon, nor in the 10 to 12 per cent. grades, prices of which are unchanged.

Billets.—Specifications on contracts, together with a moderate run of sales of small lots, enable mills to maintain about an even production rate. Among the

orders placed for open-hearth rolling billets, were some of special analysis. A fair movement in forging billets is reported. Prices are unchanged at \$22.40 to \$23.40 for rolling billets, and \$26.40 to \$27.40, for ordinary forging billets, delivered in this district.

Plates.—A fair run of miscellaneous orders is coming to Eastern mills, while specifications for bridge, tank and boat plates continue in comparatively good supply. The mills find it difficult to maintain a productive rate in excess of 65 per cent. of capacity but makers look forward to more active conditions, particularly in boat and structural plates. Some Eastern producers are maintaining the recent 1.30c. quotation for ordinary heavy plates delivered here, and have refused business offered at a lower basis. At the same time other mills have done 1.27½c., delivered, on ordinary business, and 1.25c. could be done if it was of a particularly desirable nature.

Structural Material.—While some bridge contracting is in sight, and several small orders have been taken, the demand for fabricated structural work has become lighter. Mills and fabricators have, however, booked some fair orders in other districts, particularly in New England. Mills are fairly well engaged, with specifications for work under contract coming in quite freely. Some inquiry for structural buildings is noted in the South, among which a hotel in Richmond, Va., will require about 3000 tons. Prices are unchanged at 1.25c. to 1.30c. for plain shapes, delivered in this vicinity.

Sheets.—Eastern mills have maintained prices firmly, notwithstanding reductions in prices of Western sheets, and continue to take enough business on the old basis to keep them fully engaged, although orders are practically all for small lots for early delivery. While Western No. 28 sheets are quoted at 2c. to 2.05c., delivered here, Eastern mills, making smooth, loose-rolled sheets, obtain ¼c. to ½c. advance over the outside quotation.

Bars.—The demand for ordinary iron and steel bars has not been active, although several good inquiries for concrete bars are noted. One inquiry before the trade is for 3800 tons of twisted bars for concrete bridges over the Gunpowder and Bush rivers for the Pennsylvania Railroad. An inquiry for 1500 tons of plain concrete bars is also noted. In ordinary refined iron business has been principally in small lots at prices ranging from 1.25c. to 1.32½c., delivered here, and report has it that the outside price has been shaded on common bars. Steel bars are moderately active at 1.25c. to 1.30c., delivered here.

Coke.—A decidedly better demand for foundry coke has developed and prices have been steadily moving upward. Sales of moderate lots for early delivery are being freely made at \$2.40 at oven, and in instances \$2.50 is asked. Further sales of furnace coke for early delivery are noted, a Lehigh Valley interest taking 10,000 tons at close to \$1.80 at oven. For delivery in this district the following range of prices per net ton is named:

Connellsville furnace coke.....	\$4.00 to \$4.15
Foundry coke	4.50 to 4.70
Mountain furnace coke	3.70 to 3.85
Foundry coke	4.15 to 4.35

Old Material.—The market is practically at a standstill. Melters show little interest in the situation, and about the only business moving has been between dealers, who have been buying and selling small lots to apply against contracts which had to be completed before the month's end. As high as \$12 has been paid for No. 1 heavy melting steel scrap under such circumstances. Little movement in rolling mill grades is reported. The following range of prices about represents quotations at which ordinary current business for prompt shipment can be done for delivery in buyers' yards, eastern Pennsylvania and nearby points, taking a freight rate from Philadelphia varying from 35c. to \$1.35 per gross ton, for shipment ranging from prompt to the remainder of the year:

No. 1 heavy melting steel scrap and crops.....	\$11.75 to \$12.25
Old steel rails, rerolling (nominal).....	13.50 to 14.00
Low phosphorus heavy melting steel scrap.....	15.50 to 16.00
Old steel axles	17.00 to 17.50
Old iron axles (nominal).....	22.00 to 23.00
Old iron rails (nominal).....	15.50 to 16.00
Old car wheels	12.00 to 12.50
No. 1 railroad wrought	14.00 to 14.50
Wrought iron pipe	11.50 to 12.00
No. 1 forge fire	9.75 to 10.25
No. 2 light iron (nominal).....	6.75 to 7.25
Wrought turnings	9.00 to 9.50
Cast borings	8.00 to 8.50
Machinery cast	13.00 to 13.50
Railroad malleable (nominal).....	11.75 to 12.25
Grate bars, railroad	10.00 to 10.50
Stove plate	9.50 to 10.00

Cleveland

CLEVELAND, OHIO, February 27, 1912.

Iron Ore.—Recent Eastern inquiries have not resulted as yet in any business, and in the Central West furnacemen are not yet ready to buy. The inactivity in the pig iron market has a tendency to cause furnacemen to delay covering for 1912, and the prediction made some time ago that there would be practically no buying until April 1 seems still to hold good. We quote prices as follows: Old range Bessemer, \$4.50; Mesaba Bessemer, \$4.25; old range non-Bessemer, \$3.70; Mesaba non-Bessemer, \$3.50.

Pig Iron.—The market is almost lifeless. Some small lot sales are being made, but few of these are for over carloads. The only new inquiry of any size is from a leading manufacturer of sanitary goods for 1500 tons of No. 2 Southern for its Louisville plant for the second quarter. Consumers generally have under contract all the iron they will need for the first half, and sellers do not expect much activity until the buying movement for the third and fourth quarter starts. While some iron, mostly foundry grades, has been sold for delivery after July 1 this tonnage is quite small. Sales for delivery through the third quarter have been made at first half prices. Sellers generally, however, do not care to take orders for delivery after July at present prices, and consumers seem to be taking no interest in the market for the last half. Prices on Northern grades are steady at recent quotations. Southern iron is firm. Furnaces in the Birmingham district have been asking \$10.50 for No. 2 foundry for forward delivery. We quote the following prices for prompt shipment and for the second half, delivered, Cleveland:

Bessemer	\$14.90
Basic	13.25
Northern foundry No. 2.....	13.25
Southern foundry No. 2.....	14.35 to 14.85
Gray forge	12.50
Jackson County silvery, 8 per cent. silicon.....	17.05

Coke.—There is still considerable complaint by consumers of foundry coke because of delays in securing shipments. The demand for foundry coke on contract is good and some consumers are ordering more than they have contracted for. Prices on foundry grades are very firm. We quote Standad Connellsville furnace coke at \$1.80 to \$1.90 per net ton at oven. Connellsville foundry coke is held at \$2.25 for prompt shipment and \$2.25 to \$2.40 for contract.

Finished Iron and Steel.—The market is quiet as regards new demand, which continues light. However, specifications on contracts are holding up well. Stocks in consumers hands are understood to be generally low but the unsettled price situation does not encourage buying. While one interest is attempting to hold the steel bar market at 1.15c., Pittsburgh, the 1.10c. price is the ruling quotation, tonnage being offered for delivery until July 1 at that price. Plates are more irregular than other lines, quotations ranging from 1.07½c. to 1.15c. The general quotation is 1.10c. but mills making a limited range of sizes are shading this price. Structural material is generally quoted at 1.15c., though a round tonnage would bring out a concession of \$1 a ton. A contract for 700 tons for the Harvey Hotel, Cleveland, has been made by the McMyler Interstate Company. Demand for structural material is quiet but fabricators expect a decided improvement in the early spring. The demand for sheets is fair but prices are unsatisfactory. No. 28 black sheets are quoted at 1.80c. to 1.85c. and No. 28 galvanized at 2.80c. to 2.85c. The plant of the Cleveland Steel Company, which has been idle for several weeks for repairs, is again in operation. There is a moderate demand for forging billets in car lots. Sales have been made in the past few days at prices ranging from \$26.50 to \$28, Pittsburgh. Rivet orders are coming out in about the same volume as a month ago. We quote structural rivets at 1.50c. and boiler rivets at 1.60c., Pittsburgh. The demand for iron bars is light but both local mills are running. Prices are unchanged. We quote iron bars at 1.20c., Cleveland mill.

Old Material.—The scrap market continues inactive. Some of the mills have taken about all the material they have coming on contract but they have large stocks in their yards. One large local consumer is holding back on shipments. Consumers, in spite of the price concessions that are being offered, are taking no interest in the market. The Erie Railroad has a list out to close March 1. The lack of demand has resulted in a general weakening of all grades but because of the absence of sales dealers have not changed.

quotations. Dealers' prices, f.o.b. Cleveland, are as follows:

Per Gross Ton.	
Old steel rails, rerolling.....	\$12.25 to \$12.75
Old iron rails.....	14.00 to 14.50
Steel car axles.....	17.50 to 18.00
Heavy melting steel.....	11.00 to 11.50
Old car wheels.....	12.00 to 12.50
Relaying rails, 50 lb. and over.....	22.50 to 23.50
Agricultural malleable.....	10.50 to 11.00
Railroad malleable.....	11.50 to 12.00
Light bundled sheet scrap.....	9.50 to 10.00
Per Net Ton.	
Iron car axles.....	\$18.50 to \$19.00
Cast borings.....	6.25 to 6.50
Iron and steel turnings and drillings.....	6.75 to 7.00
Steel axle turnings.....	7.25 to 7.75
No. 1 busheling.....	9.50 to 10.00
No. 1 railroad wrought.....	11.00 to 11.25
No. 1 cast.....	11.25 to 11.75
Stove plate.....	9.00 to 9.25
Bundled tin scrap.....	11.00 to 11.50

Cincinnati

CINCINNATI, OHIO, February 28, 1912. (By Telegraph.)

Pig Iron.—General conditions show a slight improvement. An inquiry for about 2100 tons of different grades of iron originates with a Michigan manufacturer, all for third quarter shipment. For delivery through March, April and May an Indiana melter is asking for 1000 tons each of Northern and Southern foundry iron, and a nearby foundry wants 3000 tons for the same delivery, with the probability that if the order is placed it will go to Southern producers. An Eastern pipe maker is inquiring for prices in this market on 5000 tons of gray forge and No. 3 foundry for May and June shipment. Approximately 500 tons of No. 1 soft was sold to two Western melters for March to June movement at \$10.50, Birmingham basis, but it is understood this was a special lot which the furnace had on hand to be moved and the price does not fairly represent the market. Other reported sales include 500 tons of No. 2 foundry at \$10.50, Birmingham, for first half shipment, and for the same delivery about 300 tons of Southern charcoal iron at \$22. As a rule the Southern furnaces are sold far enough ahead to justify them in holding out for more than \$10, Birmingham, and a number of carload sales are reported at a higher rate, although there is enough iron available for prompt shipment at \$10 to continue this quotation. Northern iron is slow at \$13, Ironton, for any delivery until July 1. Malleable is quotable at the same figure. No open quotations are yet being made for third and fourth quarter business by either Northern or Southern producers. Based on freight rates of \$3.25 from Birmingham and \$1.20 from Ironton we quote, f.o.b. Cincinnati, as follows, for prompt shipment:

Southern coke, No. 1 foundry and 1 soft.....	\$13.75 to \$14.25
Southern coke, No. 2 foundry and 2 soft.....	13.25 to 13.75
Southern coke, No. 3 foundry.....	12.75 to 13.25
Southern coke, No. 4 foundry.....	12.50 to 13.00
Southern gray forge.....	12.50 to 13.00
Ohio silvery, 8 per cent. silicon.....	16.45 to 16.95
Lake Superior coke, No. 1.....	14.70 to 14.95
Lake Superior coke, No. 2.....	14.20 to 14.45
Lake Superior coke, No. 3.....	13.70 to 13.95
Basic, Northern.....	14.20 to 14.45
Standard Southern car wheel.....	25.25 to 25.50
Lake Superior car wheel.....	19.00

(By Mail.)

Coke.—Labor and weather conditions have tended to cut down Connellsville production, and prices are again firmer, especially on foundry grades, which are now bringing from \$2.25 to \$2.40 per net ton at oven for either prompt or first half shipment. Furnace coke is quoted around \$1.80 to \$1.90 per net ton at oven, but it is probable that a few brands could be bought for nearby movement at \$1.75. Wise County 72-hr. coke also shows a firmer tendency, and one large interest has set \$2.25 as its minimum figure for any shipment in the next six months, while a few brands are held as high as \$2.35. In the Pocahontas district conditions are unchanged, except that there is an excellent demand for 48-hr. coke for domestic use, which is rather phenomenal for this season. Pocahontas furnace coke averages about \$1.75 per net ton at oven, and foundry grades are bringing from \$2 to \$2.10.

Finished Material.—The market is wavering; so far mill agencies have not been called on to cut prices, as there is practically no demand for any kind of finished material, with the exception of small warehouse orders. The lowest figure quoted on plates in this territory, so far as can be ascertained, is 1.12½c., Pittsburgh. Steel bars are quoted at 1.15c., but it would be easy to place any desirable order at 1.10c., Pittsburgh basis. The local warehouse price on steel bars remains at 1.60c., and on structural material 1.70c., and the latter would be cut to lengths when desired.

Old Material.—A number of dealers report last week as being the dulllest for several years. Consumers who are not covered with contracts previously made are buying in very small quantities, and this tends to make the dealers equally indifferent as to taking on any larger stocks. The minimum figures given below represent what buyers are willing to pay for delivery in their yards, southern Ohio and Cincinnati, and the maximum quotations the selling prices f.o.b. at yards:

Per Gross Ton.	
Bundled sheet scrap.....	\$6.75 to \$7.25
Old iron rails.....	12.25 to 12.75
Relaying rails, 50 lb. and up.....	20.00 to 21.00
Rerolling steel rails.....	11.00 to 11.50
Melting steel rails.....	8.75 to 9.25
Heavy melting steel scrap.....	8.75 to 9.25
Old car wheels.....	10.75 to 11.25
Per Net Ton.	
No. 1 railroad wrought.....	\$9.50 to \$10.00
Cast borings.....	5.25 to 5.75
Steel turnings.....	5.50 to 6.00
No. 1 cast scrap.....	9.75 to 10.25
Burnt scrap.....	6.25 to 6.75
Old iron axles.....	15.75 to 16.25
Locomotive tires (smooth inside).....	11.25 to 11.75
Pipes and flues.....	6.75 to 7.25
Malleable scrap.....	7.25 to 7.75

Birmingham

BIRMINGHAM, ALA., February 26, 1912.

Pig Iron.—The general adoption of a Birmingham basis of \$10.50 for deliveries prior to July 1, has checked the buying to an appreciable extent, but has resulted in considerably more interest on the part of the melters, especially for deliveries through the last half. Trading in the past week was comparatively light, and sales are believed to have been made only in the cases where consumers' requirements were urgent. So far as is known, no tonnage was entered at lower figures than \$10.25 for No. 2 foundry, which price obtained for one brand only. It is now understood that no more iron is available at the figures just mentioned, with the probable exception of warrant holdings. For the low grades, the usual differential of 50c. does not apply except for Nos. 3 and 4 foundry. Small lots of gray forge have just been sold at \$9.50, and mottled is quoted at \$9.25. For spot shipment, higher silicon iron than is ordinarily furnished can probably be had for \$10.50, although strictly No. 1 foundry is held at \$11. An aggregate of 2,500 to 3,000 tons of Nos. 2 and 3 foundry, for early shipment, is just reported sold against local operations through Northern and Eastern offices. The prices obtained are not given out, but the \$10.50 schedule is considered as applicable to Southern territory, with prices made in other territory governed by the local conditions. An aggregate of 6,500 to 7,000 tons of foundry grades for export is now under negotiation. It will probably be placed within the present week, but it is not believed that the purchasers' views in the matter of price will be met, owing to the present condition of order-books and to the tonnage for home consumption that has recently been submitted. It is quite likely that stocks will be further reduced this month, while the general outlook is such that producers feel warranted in making repairs to stacks now idle. The production of basic iron is still represented by four active stacks, and is being consumed at local plants. We continue to quote the market for delivery in the remainder of the first half, as follows, per gross ton f.o.b. cars Birmingham:

No. 1 foundry and No. 1 soft.....	\$10.75 to \$11.00
No. 2 foundry and No. 2 soft.....	10.25 to 10.50
No. 3 foundry.....	9.75 to 10.00
No. 4 foundry.....	9.50 to 9.75
Gray forge.....	9.25 to 9.50
Standard basic.....	10.25 to 10.50
Off basic.....	9.75 to 10.00

Cast Iron Pipe.—Local producers are giving considerable interest to the water pipe requirement for St. Louis, Mo., which is to come up within a short time. Several small contracts are to be placed within this week, and an attractive tonnage for railroad culvert construction is under consideration. Local foundries are well supplied with orders for the next four months. The construction of the plant at Holt, Ala., by the Central Foundry Company of New York, is well under way, and the equipment is being made at local foundries. This plant is being built for the production of Universal water pipe, but the equipment is to be so arranged as to make soil pipe when necessary. Nothing has been heard of the Sheffield water pipe plant recently, and, so far as is known, it will continue idle. A small quantity of 10-in. water pipe for use in the city of Birmingham, which has just been placed with the American Cast Iron Pipe Company for immediate delivery, is the only tonnage of consequence reported

the past week. We continue to quote water pipe as follows, per net ton, f.o.b. cars here: 4 to 6 in., \$23; 8 to 12 in., \$22; over 12 in., average \$21, with \$1 per ton extra for gas pipe. These prices are subject to more or less shading for municipal contracts, but are firm for the small orders placed.

Old Material.—The ruling prices for this material are about the same as at the time of last report, although the condition of the market is very uncertain owing to the stock in the hands of consumers and to scarcity of certain grades on dealers' yards. The trading in the week consisted of scattering lots of steel and machinery grades, with some demand for old iron and steel rails. We continue to quote the market, nominally, as follows, per gross ton f.o.b. cars here:

Old iron axes (light)	\$12.50 to \$13.00
Old steel axes (light)	11.50 to 12.00
Old iron rails	11.50 to 12.00
No. 1 railroad wrought	10.50 to 11.00
No. 2 railroad wrought	9.00 to 9.50
No. 1 country wrought	6.00 to 6.50
No. 2 country wrought	5.50 to 6.00
No. 1 machinery	8.50 to 9.00
No. 1 steel	8.00 to 8.50
Tram car wheels	7.50 to 8.00
Standard car wheels	9.50 to 10.00
Light cast and stove plate	6.00 to 6.50

No. 3 furnace of the Sloss-Sheffield Steel & Iron Company, at North Birmingham, Ala., has been blown in to take the place of No. 4 furnace at the same plant which has been blown out for relining. Repairs are being made to No. 2 furnace at the city plant of the company, but no announcement has been made as to any increase in the active capacity.

The by-product coke ovens of the Tennessee Coal, Iron & Railroad Company, at Corey, Ala., have been started, and the bee-hive ovens of that company at Bessemer, Ala., have been laid off.

St. Louis

ST. LOUIS, Mo., February 26, 1912.

A distinctly better tone is apparent in the market here, largely the result of a considerable run of small inquiries and orders which come from sources indicating a gain in consumption. The aggregate tonnage moving is large and collections are excellent.

Pig Iron.—Pig iron on contracts is moving rapidly, and an influx of small inquiries is an indication to the dealers here that there will be greater demand in a short time. The inquiries are for 100-ton and carload lots chiefly, but the requests are insistent, showing that there is real need for the metal. The price of No. 2 Southern, Birmingham basis, continues to be quoted at \$10.50 and there is little tendency to reduce the price voluntarily, though it is possible that a large order might secure a shading of prices. No. 2 Northern is quiet at \$13, Ironton basis, with very little demand. No. 4 Southern is still scarce and would command pretty nearly a No. 3 price. Basic, malleable and other grades show no activity.

Coke.—There is still trouble in getting cars to transport coke from the ovens and in addition there is, so far as this territory is concerned, considerable difficulty in getting the coke itself. The foundry grades remain at about the last quoted figures, \$2.25 to \$2.40, at oven, for best selected Connellsville 72-hr., but unless the transportation troubles are relieved there is likely to be a local advance. The principal sale of the week not on existing contract was of 1000 tons of by-product coke at \$5.25 per ton delivered.

Finished Iron and Steel.—Buyers express confidence in a revival of activity in March. The new 21-story building of the Commonwealth Trust Company, requiring about 6000 tons, for which it is expected bids will be asked shortly, is being financed. An 18-story hotel building is also reported practically financed and also a 12-story office building, both for early spring construction. In plates orders for small lots are being placed chiefly by the car companies to fill out requirements developing since their larger orders. In bars the specifications have been fair against existing contracts with some increase in the requirements for reinforced concrete work. In steel rails, standard section, an order for 2200 tons was placed by a Western road, and there has been considerable revival of interest among the railroads of this section as to spring possibilities. In addition there has been considerable activity in track fastenings. Light rails have been in good demand from the lumber interests and there have been a few orders from the coal interests, but for the most part the latter are still keeping out of the market because of the fear of a strike April 1. No complaint whatever is being made as to collections.

Old Material.—The scrap market seems to be dead. Even the mills are not inclined to take bargains as they were a few weeks ago. There are no railroad lists out as yet, but several are expected and it is anticipated that these will exhibit more of the actual state of the market than can be told from its present lifeless condition. We quote scrap prices, f.o.b. St. Louis, as follows:

Per Gross Ton.	
Old iron rails	\$14.00 to \$14.50
Old steel rails, re-rolling	11.00 to 11.50
Old steel rails, less than 3 ft.	10.50 to 11.00
Relaying rails, standard section, subject to inspection	21.50 to 22.00
Old car wheels	12.00 to 12.50
Heavy melting steel scrap	10.00 to 10.50
Frogs, switches and guards cut apart	10.00 to 10.50
Per Net Ton.	
Iron fish plates	\$12.50 to \$13.00
Iron car axes	17.50 to 18.00
Steel car axes	15.00 to 15.50
No. 1 railroad wrought	11.00 to 11.50
No. 2 railroad wrought	10.00 to 10.50
Railway springs	9.25 to 9.75
Locomotive tires, smooth	11.00 to 11.50
No. 1 dealers' forge	8.00 to 8.50
Mixed borings	5.50 to 6.00
No. 1 busheling	8.50 to 9.00
No. 1 boilers, cut to sheets and rings	8.00 to 8.50
No. 1 cast scrap	8.50 to 9.00
Stove plate and light cast scrap	8.00 to 8.50
Railroad malleable	8.50 to 9.00
Agricultural malleable	7.50 to 8.00
Pipes and flues	7.50 to 8.00
Railroad sheet and tank scrap	7.00 to 7.50
Railroad grate bars	7.00 to 7.50
Machine shop turnings	6.50 to 7.00

Buffalo

BUFFALO, N. Y., Feb. 27 1912.

Pig Iron.—The market has been extremely quiet the past week with only a small total of transactions in all grades. Specifications on contracts remain good. Some foundries that allowed their stocks to run low are temporarily crippled in their operation on account of the non-receipt of pig iron and coke, delayed in transit by the badly congested condition of railroads, and a few have been compelled to shut down awaiting such supplies. Furnaces in this district are filled to capacity for the first quarter, with plenty of orders booked to keep them going at present capacity for a good portion of the second quarter. Prices are holding firm. We quote as follows, f.o.b., Buffalo, for first half delivery:

No. 1X foundry	\$13.75 to \$14.00
No. 2X foundry	13.50 to 13.75
No. 2 plain	13.50
No. 3 foundry	13.25 to 13.50
Gray forge	13.00 to 13.25
Malleable	13.75 to 14.25
Basic	13.75 to 14.25
Charcoal	15.75 to 17.25

Coke.—Very active conditions and some excitement prevail in the coke market on account of congestion in transit and delays in deliveries by the railroad. Great difficulty is experienced by many users in procuring requisite supplies. The increased or abnormal demand caused by these delays, combined with a scarcity of labor in the coke-producing districts, has tended to advance prices.

Finished Iron and Steel.—The market has shown very little activity for the week. The new tonnage placed in bar products has been small, inquiry has been light and a majority of sellers do not anticipate much increase in buying for a number of weeks, except possibly from the railroads and from agricultural implement makers. Specifications on contracts have also shown some decrease. But although the demand has lessened somewhat, due undoubtedly to severe weather conditions, a considerable number of dealers and users are placing specifications now in order to avoid the possibility of being without stocks when they want them and more of an inrush of specifications is expected soon for delivery the latter part of next month. The sheet and tin plate market shows a fair amount of activity, specifications on contracts being received in good volume. New buying is limited, as most users have contracted for first half requirements. The outlook in fabricated structural lines is extremely good. A large number of small jobs are up for figuring and a heavy aggregate of specifications for new building projects now on architects' boards will be ready for bids within the next month or two. The Buffalo Structural Steel Company has been awarded contract for the fabrication and erection of 200 tons required for the Sidway building addition, Buffalo, and for 600 tons to be used for the new malleable iron foundry of the Pratt & Letchworth Company, Buffalo. Metz Bros., Buffalo, have received the general contract for the Auditorium building at Cornell University, which includes 200 tons of steel.

C. F. Ernst Sons, Buffalo, are low bidders for 340 tons for St. Mary's Hospital at Niagara Falls to be built by the Sisters of St. Francis. Specifications are being prepared for the steel for the new lighthouse to be erected by the United States Government at the north entrance to Buffalo Harbor and for a factory for the Buffalo Corrugated Paper Box Company, each requiring small tonnages. The Eastern Bridge & Structural Company, Worcester, Mass., has received contract for steel for the Hotel Bancroft in that city from plans of Esenwein & Johnson, architects, Buffalo.

Old Material.—The unusual weather conditions continue to restrict dealings, mill production being checked somewhat on this account, lessening the demand for scrap materials. Dealers anticipate and are preparing for a more active market as soon as the present tied up conditions in storage yards and railroad facilities are overcome. Prices remain unchanged. We quote as follows per gross ton, f.o.b., Buffalo:

Heavy melting steel.....	\$12.50 to \$12.75
Low phosphorus steel.....	15.75 to 16.00
No. 1 railroad wrought.....	14.00 to 14.25
No. 1 railroad and machinery cast scrap.....	13.50 to 14.00
Old Steel axles.....	18.50 to 19.25
Old iron axles.....	22.00 to 22.50
Old car wheels.....	11.75 to 12.00
Railroad malleable.....	12.50 to 12.75
Boiler plate sheared.....	13.75 to 14.25
Locomotive grate bars.....	11.00 to 11.25
Pipe and tank.....	9.50 to 10.00
Wrought iron and soft steel turnings.....	7.25 to 7.50
Clean cast borings.....	6.50 to 6.75

Walter S. Burchinal, secretary of Trimble, Mudge & Co., Pittsburgh, dealers in scrap iron, steel and other metals, has taken charge of their business in the Buffalo district, where they have a large trade, with extensive and fully equipped storage yards at Lackawanna City, adjacent to the Lackawanna Steel Company's plant. Mr. Burchinal's office will be located at the yards.

The American Sheet & Tin Plate Company now has an office at 1203 Ellicott Square Building, Buffalo, in charge of D. W. C. Morrow.

The British Iron Market

Current Shipments Heavy but the Future Not Clear
(By Cable)

MIDDLESBROUGH, ENG., February 27, 1912.

Owing to the expectation of a coal strike a good many works are closing down. Buying of iron and steel is everywhere severely restricted. Russian orders for pig iron are now going to Germany. It is reported that 5000 tons of Spanish foundry iron has been sold for Genoa, Italy. Cleveland pig iron is firm. The market for semi-finished steel appears to be deadlocked. It is reported that an important American independent interest will enter upon a selling campaign in England on the basis of 97s 6d, c.i.f., for Bessemer sheet bars. Railroad traffic is disorganized. We quote as follows, the advances over last week's quotations being in No. 3 pig iron, rails and tin plates:

Cleveland pig iron warrants (closing Tuesday), 49s 6d.

No. 3 Cleveland pig iron, makers' price, f.o.b. Middlesbrough, 50s.

Welsh sheet bars, delivered at works in Swansea Valley, £5 2s 6d to £5 5s.

German sheet bars, f.o.b. Antwerp, 95s.

German 2-in. billets, f.o.b. Antwerp, 92s.

Steel bars, export, f.o.b. Clyde, £6 12s 6d.

Steel joists, 15 in., export, f.o.b. Hull or Grimsby, £6 2s 6d.

Steel ship plates, Scotch, delivered local yard, £7 7s 6d.

Steel black sheets, No. 28, export, f.o.b. Liverpool, £8 17s 6d.

Steel rails, export, f.o.b. works port, £5 17s 6d.

Tin plates, cokes, 20 x 14, 112 sheets, 108 lb., f.o.b. Wales, 13s 7½d.

(By Mail.)

Things are not moving very fast in the British iron market, but after all there is quite a good tone, and the occasional slight uplifting of steel prices bears testimony to the soundness of the position. Pig iron has had a less satisfactory appearance than actual circumstances would seem to justify; but here the speculative element comes into play, and there is unquestionably a large long account open, principally for London houses, which while not constituting a menace to the market (for the interests involved are strong) yet tends at this juncture, with serious difficulties looming in the coal trade, to restrain activity in other quarters. For the last few weeks, indeed, the Cleveland warrant market has been in a condition of inanition; but the furnace owners have good order books and are inclined to await

events. The lack of snap about business, especially in pig iron has, however, caused quite a lot of searching-of-hearts lest the promised boom of 1912 is only to share the fate usually associated with spring booms. Especially has this fear been prominent in Lancashire, where the cotton trouble has been a disturbing factor. The real trade position, however, has seldom been in better trim, the manufacturers finding difficulty in keeping pace with consumers' specifications.

There is no indication that foreign material will come into the country in sufficient quantity to make any real difference to the home trade, for in Germany and Belgium works are at their wits' end to keep pace with local demands. Prices are maintained on the upgrade though there is just a possibility that material from second hands may come out a little more plentifully and give a temporary check to the advances. There is a real scarcity of pig iron in Germany and while this is the case it is hardly likely that export trade in finished materials will be cultivated.

An Advance in Plates—A Tube Combine

The British steel position is very sound and the advance of 5s all round declared by the Associated Scottish works a few days ago caused no surprise, this being the second upward movement in six weeks, making the official minimum quotation £8 2s 6d for boiler plates, £7 7s 6d for ship plates, and £7 for angles, all less 5 per cent. delivered at Clyde shipyards. The export prices have also been raised to a similar extent, making ship plates £7 per ton basis and boiler plates £7 15s f.o.b. Clyde. The advances are regarded as the natural sequel to the rebate scheme, the superficial advantage of which to consumers has been more than counterbalanced by the forward movement of prices.

The steel and iron tube makers of South Staffordshire have practically settled their differences and an arrangement is afoot for amalgamating these firms, Stewarts and Lloyds again, as in the Scotch arrangements, taking a hand in financing the scheme and appointing a director. Selling prices have been raised 10 per cent. and this is looked upon by many as merely the first move.

A Continental Advance in Beams

The Continental Joist Syndicate, following close upon the heels of the British works, has advanced its price, or rather, while maintaining its basis price of £5 6s f.o.b. Antwerp, has so modified the rebates as to increase the selling figures very materially, the advance to England being 4s. The following are the special rebates now allowed by the Stahlwerks Verband on material proved to have been shipped to the countries mentioned after proof of destination has been given in the shape of signed bills of lading:

3s per ton for places in England on and north of a line drawn from Chester through Nottingham to Kings Lynn, and for Scotland.

8s per ton for Italy south of a line drawn from Rome to Pescara.

3s per ton for Sicily, Malta, Australia, New Zealand and for all countries comprised in the collective geographical title of the East Indies, including British and Dutch India, Siam, Straits Settlements, British Africa, South and Central America and Finland.

5s. per ton for Mexico, Cuba and Siberia via Vladivostok or other Siberian ports.

1 per cent. rebate on specifications of at least 50 tons in one section.

2 per cent. rebate on specifications of at least 100 tons in one section.

The basis price is £5 6s, f.o.b. Antwerp.

The German Iron Market

Prices Continue to Advance

BERLIN, February 15, 1912.

The firm tendency of the iron market has suffered no check. On the contrary, there is an additional batch of advances to report. The Heavy Plate Convention voted today to raise the price of that specialty 3 marks per ton, to take effect at once. This advance, which applies also to ship plates, follows just six weeks after the previous one of 5 marks, and merely takes account of the fact that the mills had already begun to oversell that earlier advance. Corrugated pipes have also been raised 10 marks, and corrugated plates and bottoms 5 marks, by the combination having control of these goods. Last week the price of iron bars was raised 3 to 5 marks. Another advance on band iron of 2.50 to 5 marks is projected owing to the higher prices of pig iron. It is reported that considerable

advances will occur in the Düsseldorf Exchange tomorrow. It is said that at the next meeting of the Steel Works Union, which will be held next week, a motion will be made to raise the prices of half-rolled and structural shapes; but it is added that the passage of such a motion is improbable in view of the fact that the union has only about four months longer to exist, unless its renewal occurs in the meantime. It will hardly make any changes in prices before the question of its prolongation is settled.

The Pig Iron Syndicate has resumed the sale of iron, and is taking orders for the second half year at the advanced prices recently reported. Business for that half year is already quite active. The syndicate is having a big run of foreign orders. Inquiries have been received from Belgium for large quantities of Luxemburg iron. The export demand is so heavy that the syndicate has difficulty in accommodating it, besides meeting its home contracts. The amount of business booked for the first half year exceeds the allotments by 100,000 tons. Shipments in January were in excess of the allotments. There are indications that the rate of production of pig iron will continue to increase for some time. The Gelsenkirchen Company, which is this month getting its full number of six new furnaces in blast at Esch, has already decided to erect two more furnaces there.

A report on trade conditions in the Silesian district indicates great activity in all branches of production. In hardly any line is there an exception to the general boom conditions of the trade, and further improvement is looked for in the spring quarter. Export trade is unusually active. All grades of pig iron are in heavy demand and production is at high-water mark. The demand for plates and bars has grown more intense. Manufacturers of steel tubing report an unusually strong improvement, and prices for strips and finished tubing have both sharply advanced.

There is some talk to the effect that an effort will be made to prolong the Steel Works Union temporarily till the end of the year. It is based upon the belief that there is no prospect of getting the prolongation for five years agreed upon before the lapse of the present term of its life at the end of June. It is asserted, however, that such a proposal has no prospect of passing. On the other hand, reports indicate that some at least of the big union companies are still hopeful that the prolongation for five years will be duly agreed upon. The regular monthly meeting of the union will be held a week hence; but it is reported in the press that the question of its prolongation will not form a part of the order of business, and that if any discussion of the matter occurs it will be only in an informal way. Inasmuch as the individual companies may begin to take contracts on their own account after May 1, provided the union has not been renewed by that time, it is felt that the union is remarkably slow in getting down to serious work for arranging the prolongation.

The news from the Belgian market this week represents business as quieter. No further advances for the Belgian market itself have been reported, but a Brussels dispatch at the end of last week stated that the International Beam Convention had raised prices 3 to 4 shillings per ton.

Boston

BOSTON, MASS., February 27, 1912.

Old Material.—The market remains quiet, with very little prospect of early improvement, according to the opinions expressed by the dealers. The only change in price is a drop of 50c. in No. 1 wrought and soft steel. The prices quoted below are those offered by the large dealers to the producers and to the smaller dealers and collectors, per gross ton, carload lots, f.o.b. Boston and other New England points taking Boston rates from eastern Pennsylvania points. In comparison with Philadelphia prices the differential for freight of \$2.30 a ton is included. Mill prices are approximately 50c. a ton more than dealers' prices.

Heavy melting steel	\$8.75 to	\$9.00
Low phosphorus steel	11.45 to	11.95
Old steel axles	14.00 to	14.50
Old iron axles	17.00 to	18.00
Mixed shafting	13.00 to	13.50
No. 1 wrought and soft steel	10.00 to	10.50
Skeleton (bundled)	7.00 to	7.50
Wrought iron pipe	8.50 to	9.00
Cotton ties	7.00 to	7.50
No. 2 light	4.50 to	5.00
Wrought turnings	5.75 to	6.25
Cast borings	5.25 to	5.75
Machinery, cast	12.50 to	13.00
Malleable	8.75 to	9.25
Grate bars	6.00 to	6.50
Stove plate	8.00 to	8.50
Cast iron car wheels	11.75 to	12.00

New York

NEW YORK, February 28, 1912.

• **Pig Iron.**—The market has shown very little life and the one inquiry of importance before the trade in the past two weeks has been disposed of by the purchase of 900 tons each of No. 2 X and No. 2 plain foundry iron. The buyer is a maker of plumbing and steam fitting supplies in eastern New Jersey. It is understood that \$14.70 delivered was paid for No. 2 X iron and \$14.40 delivered for No. 2 plain. One part of the order was taken by a Lehigh seller and the remainder by a furnace company farther west in Pennsylvania which has a freight of \$1.05 to tidewater. Some foundries are taking account of the possibility of a coal strike and are accumulating a stock of coke. One important foundry interest has arranged to lay in a 90-day supply of coal and coke. Apart from an inquiry from a pump interest, very little pig iron is being figured on. Founders seem to be pretty well supplied for the next three or four months. The steadiness of the rate of consumption is indicated by the fact that iron is being taken according to contract and in some cases buyers are rather urgent about shipments. We quote as follows for Northern iron at tidewater: No. 1 foundry, \$15; No. 2 X, \$14.75; No. 2 plain, \$14.50 to \$14.75. We quote Southern iron at \$15 for No. 1 foundry and \$14.50 to \$14.75 for No. 2.

Finished Iron and Steel.—While specifications on contracts and new business are coming in in fairly satisfactory volume, prices remain exceedingly low and there is no gainsaying the fact that conditions are regarded as bad as at any time for a long period. Though new projects are constantly being learned of, few develop into inquiries; and when they do competition is naturally keen to an extreme. Prices for attractive orders seem firm at 1.10c., Pittsburgh, for bars, as well as for shapes and plates. As expected with the advent of spring, sizable inquiries have appeared for reinforcing bars. The week has seen closed 35,000 tons of structural work, involved in relatively large-sized structures, including 14,000 tons for the United Electric power house on 201st street, which is regarded as settled, and 11,000 tons for the Western Union building, of which at least a part has been closed, the structure to go up in sections. Among the contracts are the following: 2,500 tons for the New York Times Annex, 217 West Forty-third street, awarded to Mulcahy & Gibson, Inc.; 1,800 tons for a building on the Hoffman House site to the Levering & Garrigues Company; 1,000 tons for the Second National Bank Building, New Haven, Conn., to the Eastern Steel Company; 400 tons for the building of the Sun, of Lowell, Mass., to the New England Structural Company; 400 tons for a building at 35 West Thirty-ninth street, for the New Brunswick Realty Company, to the Passaic Structural Steel Company; 1,000 tons for the Rosewell F. Easton loft at Thirty-second street and Fourth avenue, to the Levering & Garrigues Company; 800 tons for the New York Central terminal area work (partly reported last week), about equally divided between the Fort Pitt Bridge Works and the American Bridge Company, which is also to erect a pier at Poughkeepsie for the Hudson River Day Line, and 100 tons for a bridge for the New Haven at Westerly, R. I., to L. F. Shoemaker & Co. Other structural work closed includes 200 tons for bridges for the Southern Railroad, 200 tons for bridges for the Pennsylvania Railroad, 300 tons for a bridge of the Atlantic Coast Line, 500 tons for the Polytechnic Institute in Baltimore, 450 tons for a garage in Springfield, Mass., 350 tons for a high school in Bangor, Me., 250 tons for a building for the Department of Agriculture in Washington, 700 tons for an insurance company building in Boston, and 250 tons for a building for Dartmouth College. One new project of size is a 16-story building at Thirtieth street and Fourth avenue, New York, requiring 1,800 tons, and it is understood that Colgate & Co. are to erect a large addition to their plant in Jersey City. Quotations remain: Steel bars, plates and plain structural material, 1.26c. to 1.31c.; bar iron, 1.27c. to 1.32c., all New York. Plain material from store, New York, 1.65c. to 1.75c.

Cast Iron Pipe.—An important contract will be made March 6 by the Department of Water Supply, Gas and Electricity, New York City, which will then open bids for 6,000 tons of high pressure pipe, consisting principally of 12 and 16-in., with some 20 and 24-in. More private buying is encouraging the pipe manufacturers, whose business from this source is running well ahead of the corresponding period of last year. With the steady filling up of order books, a tendency to stiffen prices is observed. Carload lots of 6-in. are quoted at \$22 to \$23, tidewater, per net ton.

Old Material.—Transactions are confined to small lots, seldom running over 100 tons. No class of old material can be called active, but more appears to be doing in stove plate than in other commodities. Rolling mills are almost completely out of the market, even the largest refusing to receive shipments on contracts. Steel works in eastern Pennsylvania are again exceedingly critical of material delivered on contract, making rejections on grounds which would seem to indicate that cheaper steel scrap is becoming available. While quotations are unchanged, there seems little doubt that concessions of 25c. to 50c. per ton would be made throughout the list on fair sized quantities.

Metal Market

NEW YORK, February 28, 1912.

The Week's Prices

		Cents Per Pound for Early Delivery.			
Copper, New York.		Lead		Spelter	
Feb.	Lake.	Electro-lytic.	Tin, New York.	New York.	St. Louis.
23.....	14.50	14.37½	43.00	4.00	3.92½
24.....	14.50	14.37½	43.00	4.00	3.92½
26.....	14.50	14.37½	43.37½	4.00	3.92½
27.....	14.50	14.37½	43.45	4.00	3.92½
28.....	14.50	14.37½	43.37½	4.00	3.92½

Copper is strong with a tendency to go higher. Pig tin is scarce or tightly held, despite heavy arrivals. Tin plates are unchanged. The low prices of lead still prevail. Spelter is higher and strong. Antimony is unchanged.

New York

Copper.—The copper market is strong with a decided tendency upward and there is some talk that 15c. copper may be reached in the near future. After a considerable period of quiet a good business developed in copper about a week ago to-day and continued for three or four days. Sales were made which ran into the millions of pounds, mostly of electrolytic, although a considerable quantity of Lake copper was sold also. During the buying prices ranged from 14.37½c. to 14.50c., cash, New York, with a considerable quantity going at 14.45c., same terms. Some sellers adhered to 13.37½c. throughout the week, but it is not known whether they could have met heavier demands upon them at that price. It is said that some sales were made during the activity at 14.62½c. Copper can be bought to-day at 14.50c. for Lake, some brands ranging higher, and 14.37½c. and upward for electrolytic. In London the price of spot is quoted to-day at £64 7s. 6d. and futures at £65 1s. 3d. The exports of copper this month have been 30,876 tons.

Pig Tin.—The feature in the tin market is the scarcity of the metal, despite recent heavy arrivals. Nearly all of the tin which recently arrived here appears to have been shipped directly into consumption against old contracts. This has taken consumers out of the market and the demand has been light. Within the month there have arrived here 4960 tons and the stock on hand at the first of the month was 924 tons, a total of 5884 tons in sight. It is estimated that 4000 of the 5884 tons was delivered into consumption, and inasmuch as there is 930 tons on the Minnewaska, which will not make February delivery, it is figured that there is at the present time only about 900 tons of available stocks in sight. The scarcity of visible supply in this market is certain to restore the premium which prevailed until recent date. It is understood that a quantity of tin is being held here for London account awaiting a higher price, but if this is true the quantity cannot be ascertained at the present time. Tin is quoted in New York to-day at 43.37½c. The price in London is £194 5s. for spot and £190 5s. for futures. The amount afloat is 1870 tons.

Lead.—The situation in lead is practically unchanged, with the American Smelting & Refining Company continuing to be the cheapest seller. The independents have been doing a little business in St. Louis at 4c., although their competitor is selling there at 3.92½c. The price in New York is 4c. Consumers have been well supplied as a rule and the market is quiet.

Spelter.—The tendency in spelter prices is upward. The metal has been growing stronger steadily during the last week or ten days. With some brands of prime Western spelter no position nearer than April is available. Jobbing lots of one ton or thereabouts have brought 7c. Sales have been made within the last day or two at 6.75c., St. Louis, for February and early March delivery.

Antimony.—The price of Cookson's antimony has varied slightly during the week and to-day stands at 7.25c. Hallett's is quoted at 7.37½c. and Chinese and Hungarian grades at 6.78½c. to 7c.

Ferroalloys.—There has been very little new business in the New York market in ferroalloys, although consumers are calling steadily for deliveries on contract. Eighty per cent. ferromanganese is quoted at an unchanged price of \$41, Baltimore, and 50 per cent. ferrosilicon at \$70, Pittsburgh.

Old Metals.—The demand is not urgent. Selling prices are firm as follows:

	Cents per lb.
Copper, heavy and crucible.....	13.50 to 13.75
Copper, heavy and wire.....	13.00 to 13.25
Copper, light and bottoms.....	12.00 to 12.25
Brass, heavy.....	8.75 to 9.00
Brass, light.....	7.00 to 7.25
Heavy machine composition.....	11.00 to 11.25
Clean brass turnings.....	8.25 to 8.50
Composition turnings.....	9.50 to 10.00
Lead, heavy.....	3.75
Lead, tea.....	3.50
Zinc, scrap.....	5.25

Chicago

FEBRUARY 26.—The demand for copper has been strong and sales have been heavy. The price of spelter continues to soar and premiums are being paid for quantities for prompt shipment. We quote as follows: Casting copper, 14.37½c.; Lake, 14.62½c., in carloads for prompt shipment; small lots, ¼c. to ¾c. higher; pig tin, carloads, 46c.; small lots, 47c.; lead, desilverized, 4c. to 4.05c., for 50-ton lots; corroding, 4.25c. to 4.30c. to 4.60c. for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 6.75c. to 6.85c.; Cookson's antimony, 8.50c., and other grades, 7.50c. to 8c., in small lots; sheet zinc is \$8.25, f.o.b. La Salle or Peru, Ill., less 8 per cent. discount, in carloads of 600-lb. casks. On old metals we quote buying prices for less than carload lots: Copper wire, crucible shapes, 11.75c.; copper bottoms, 10.75c.; copper clips, 11.50c.; red brass, 10.75c.; yellow brass, 8.50c.; lead pipe, 3.90c.; zinc, 4.25c.; pewter, No. 1, 26c.; tinfoil, 37c.; block tin pipe 38c.

St. Louis

FEBRUARY 26.—The metal markets have not been particularly active, though there has been enough doing to give them a little character. Lead is showing increasing strength, with holders firm at 4c. Spelter is firmer at 6.57½c. for spot and future deliveries running from 6.40c. to 6.55c., according to conditions. Tin is quotable at 43.47½c.; Lake copper at 14.80c.; electrolytic copper, 14.75c., and antimony at 7.60c. In the Joplin ore district shipments of both lead and zinc ores were cut down during the week by bad weather. The strength in the spelter market prevented ores from dropping and better prices than those of the previous week prevailed. On miscellaneous scrap metals we quote as follows: Light brass, 5c.; heavy brass and light copper, 9c.; heavy copper and copper wire, 10c.; zinc, 3.50c.; lead, 3.50c.; pewter, 21c.; tinfoil, 31c.; tea lead, 3c.

Iron and Industrial Stocks

NEW YORK, February 28, 1912.

While the stock market continues dull some interesting changes have occurred. Republic stocks declined sharply with the passing of the dividend on the preferred. On the other hand Lake Superior Corporation advanced on the supposition that the Canadian Government is likely to restore the payment of iron and steel bounties. The range of prices on active iron and industrial stocks from Wednesday of last week to Tuesday of this week was as follows:

Allis-Chalm., com....	¾-1	Pressed Steel, pref..	97-98
Allis-Chalm., pref....	5½-6½	Railway Spring, com.....	27½
Baldwin Loco., pref.....	103½	Railway Spring, pref.....	103
Beth. Steel, com....	27¾-28	Republic, com.....	15¾-19¾
Beth. Steel, pref....	56½-57½	Republic, pref.....	64½-74
Can, com.....	11½	Sloss, com.....	40
Can, pref.....	91½-92½	Pipe, com.....	50½-51
Car & Fdry, com....	50¾-51	Pipe, pref.....	50¾-51
Car & Fdry, pref.....	115¾	U. S. Steel, com.....	59½-60¾
Steel Foundries.....	27½-28	U. S. Steel, pref.....	108½-108½
Colorado Fuel.....	23¾-24¾	Westinghouse Elec....	73-74
General Electric.....	158¾-161	Va. I. C. & Coke.....	56-58
Gr. N. Ore Cert.....	36¾-37¾	Chic. Pneu. Tool.....	46-46½
Int. Harv., com.....	105¾-106	Cambria Steel.....	42-42¾
Int. Pump, com.....	28-29	Lake Sup. Corp.....	27½-30
Int. Pump, pref.....	80	Pa. Steel, pref.....	100-100¾
Locomotive, com....	31¾-32¾	Warwick.....	11
Locomotive, pref....	104-104¾	Crucible Steel, com.....	10½
Nat. En. & St., pref.....	88	Crucible Steel, pref.....	80½-80½
Pressed Steel, com....	28¾-30¾		

The Republic Iron & Steel Company has deferred payment of the quarterly dividend of 1¼ per cent. on the preferred stock, which would have been payable April 1.

Personal

Heinrich Koppers, Essen-Ruhr, Germany, head of the H. Koppers by-product coke and gas oven systems, arrived in New York February 22 from Germany. The growth of his interests abroad has been extensive, and this is Mr. Kopper's first visit to his American office in two years.

The bronze statue of Andrew Carnegie, erected by the Carnegie Veteran Association, composed of Mr. Carnegie's former partners and other associates, was exposed to public view in the foyer of Carnegie Music Hall at Pittsburgh February 20.

James S. Abrams, Chester, Pa., formerly representing the Brylgon Steel Casting Company and the Baldt Steel Company, New Castle, Del., has accepted a position with the Nelson Valve Company, Wyndmoor, Pa., as special representative in Pennsylvania and contiguous territory, for the sale of the Nelson acid open-hearth steel castings. He will make his headquarters in the Nelson Valve Company's Philadelphia office, in the Real Estate Trust Building.

P. M. Guba, formerly manager of the transmission department of the Fairbanks Company, Philadelphia, has resigned to accept a position with the Jones & Laughlin Steel Company at Pittsburgh.

O. W. Youngquist, for a number of years connected with H. Channon as railroad sales manager, has been appointed manager of the Chicago office of Hubbard & Co., Pittsburgh, manufacturers of railroad track tools, shovels, spades and scoops, and will have his headquarters in the Fisher Building.

A. R. Hunt, general superintendent of the Homestead Steel Works of the Carnegie Steel Company, Homestead, Pa., has announced the following appointments at the Howard Axle Works: Samuel C. Wood, superintendent, to succeed James H. Grose, recently appointed assistant general superintendent of the Youngstown steel plant; Frank J. Black, superintendent of the wheel department, and B. F. Fence and C. D. Rafferty, assistant superintendents of the wheel department.

F. C. Colwell, manager of sales of the Allis-Chalmers Company, Cincinnati, Ohio, has been transferred to the New York office, where he will hold the same position.

W. J. Houston, formerly general sales manager for Ohio for the Moreland Coke Company, has been made general sales manager of the company and is now located in the Bessemer Building, Pittsburgh. He will be succeeded as general sales manager for Ohio by B. W. Wister, formerly of the Goff-Kirby Coke Company, who will have offices in the Rockefeller Building, Cleveland.

O. W. Byers of the Dravo-Doyle Company, Pittsburgh, delivered a lecture recently before the Engineers' Society of Youngstown, Ohio, on the subject of "Steam Turbines and Centrifugal Pumps."

R. C. Steifel, of the offices of the National Tube Company at Ellwood City, Pa., has gone on a trip to Central America, including Panama.

Paul R. Ramp, who for several years has been connected with the Murray Iron Works Company, Burlington, Iowa, has accepted the position of foundry superintendent of the International Harvester Company, Akron, Ohio.

William S. Pilling, of Pilling & Crane, Philadelphia, Pa., left February 24 for a month's vacation in Florida and Nassau.

W. A. DeWall, formerly in the purchasing department of the American Sheet & Tin Plate Company, Pittsburgh, has resigned to become purchasing agent of the Portsmouth Steel Company, Portsmouth, Ohio.

H. G. Kiefer, formerly general manager of the Detroit Edge Tool Works, and more recently assistant metallurgist of the H. H. Franklin Mfg. Company, Syracuse, N. Y., has just been made chief metallurgist, in charge of the newly created department of the Timken Roller Bearing Company, Canton, Ohio.

Arthur T. Waterfall, general superintendent of the Russell Wheel & Foundry Company, is proposed by a number of leading members of the Detroit Board of Commerce for the next secretary of that organization.

Irving H. Reynolds, vice-president and general manager of the William Tod Company, Youngstown, Ohio, has resigned and will retire from the company May 1.

B. M. W. Hanson, works manager of the Pratt & Whitney Company, Hartford, Conn., was presented with a handsome silver loving cup by a group of his friends among the prominent manufacturers of his home city the evening of February 26, the occasion being his forty-sixth birthday anniversary. The presentation was made at a dinner given at the Hartford Club.

Barton R. Shover, formerly chief electrical engineer in the Youngstown district of the Carnegie Steel Company, comprising the Ohio works, Upper and Lower Union mills in Youngstown, the Greenville works at Greenville, Pa., and Niles blast furnace at Niles, Ohio, has been made general superintendent of the proposed new open-hearth steel plant of the Brier Hill Steel Company, to be erected adjacent to the Brier Hill furnace, Youngstown, Ohio.

William E. Corey sailed for Europe on the Olympic February 21. In an interview he said that, apart from political uncertainties and investigations, an important factor in the present condition of the iron trade is the pronounced expansion of recent years. Output has been practically doubled in the past decade. He expressed the opinion that not until demand reaches a level corresponding more closely with the capacity of the mills is there likely to be any material improvement from the standpoint of prices.

S. T. Fulton, Chicago representative of the Railway Steel Spring Company, has been appointed general sales agent, with headquarters in New York, effective March 1.

Julian Kennedy, the well-known consulting engineer of Pittsburgh, has returned from India, where he witnessed the starting up of the new steel plant of the Tata Iron & Steel Company.

W. S. Chase, general sales manager of the National-Acme Mfg. Company, Cleveland, Ohio, and Oliver Henn, of the same company, sailed February 24 from New York for Europe.

H. B. Kraut, M. E., who is connected with Joseph T. Ryerson & Son, 30 Church street, New York, sailed for Europe from New York February 24.

Obituary

THOMAS GUILFORD SMITH, Buffalo, N. Y., died February 20, aged 72 years. He was born in Philadelphia, graduated from Central High School of that city and in 1861 graduated from the Rensselaer Polytechnic Institute. Entering the engineering department of the Philadelphia & Reading Railroad, he was assigned a responsible position, from which he resigned in 1865 to become manager of the Philadelphia Sugar Refinery, a position he retained for four years. For several years following he was connected, as consulting engineer, with railroad enterprises. In 1872 he was made secretary of the Union Iron Company, Buffalo, and in 1878 he became Western sales agent of the Philadelphia & Reading Coal & Iron Company, with headquarters at Buffalo. In 1883 the firm of Albright & Smith was formed as sales agents for the same company in New York State and Canada. In 1889 he became sales agent for Carnegie, Phipps & Co., Ltd. When this company was merged with the Carnegie Steel Company Mr. Smith was appointed its Buffalo representative, retiring in 1911. He was a member of many scientific and literary societies, and was prominent in local charities and educational movements. He leaves a widow and two sons.

FREDERICK W. WOLF, Chicago, founder and president of the Frederick W. Wolf Company, builder of refrigerating machinery, died February 18, aged 75 years. He organized a manufacturing company in the refrigerating business as early as 1865.

EDWIN F. BROWN, formerly president of the Brown Bros. Mfg. Company and the Brown Specialty Machinery Company, and at one time president of the Monroe National Bank, Chicago, died February 15 at his home in Evanston, Ill. He was prominent in financial and political circles in addition to his manufacturing interests.

CHARLES LEWIS, president of the Lewis Spring & Axle Works, Jackson, Mich., and interested also in Detroit industries, died February 24, aged 59 years.

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Against Lower Duties on Iron and Steel

ing on the number of furnaces in operation, and the maximum and minimum pay rolls in the last ten years were \$416,150 to \$782,566.00 respectively per annum.

The group of Eastern Pennsylvania and New Jersey furnaces producing merchant pig iron have a combined output of approximately 3,250,000 tons, all of which would be equally affected by the proposed reduction of duty.

In conclusion, it seems to me unfair to propose a rate of duty that will open a gateway for foreign pig iron to such an extent as to close our industries and practically ruin a business representing millions of dollars of investment and employing large numbers of men. I, therefore, urge you to do what you can to have the present rate of duty on pig iron continue.

SENATOR CLARK. Where do you get most of your iron ore?

MR. PECKITT. Our own iron ore comes from New Jersey, and is about 50 miles from the furnace.

SENATOR CLARK. Where are the largest importations of iron ore from?

MR. PECKITT. The largest importation of iron ore into this country is from Cuba.

SENATOR CLARK. You used an expression to the effect that you thought perhaps the time had come for raw material to be put on the free list.

MR. PECKITT. Yes, sir.

SENATOR CLARK. That would include not only iron ore, but coal and other commodities. How do you think that would affect the coal interests? Do you not think it would be more equitable to have a sufficient duty upon your product, and also leave a sufficient duty upon the raw material you use, that would work to the advantage or the necessities, perhaps, of the producer of your raw material, which is his finished product?

MR. PECKITT. That might be, perhaps, the systematic way of looking at it; but it seems to me that rather than use our own raw material it might be better to import it.

SENATOR CLARK. What is the benefit of our raw material unless we do use it? However, I will not ask you that, because I do not care to enter into an argument. You are looking at the matter from your standpoint as a manufacturer; and from your standpoint I presume you are correct.

The 24-Hour Change-Shift Stretch Abolished

MR. PECKITT. I should like to say one word more about labor. I have lately heard a great deal of talk about labor in iron and steel works, particularly blast furnace labor. The blast furnace, as has been stated, involves a metallurgical process requiring continuous operation. Our system of changing the weekly shifts so that men on day turn may change to the night turn without interruption is a little different from the practice at most other plants. It partly does away with the so-called long turn of 24 hours. The change is made each Saturday noon. As an example, we will suppose that the night shift, having worked each night up to and including Friday night, is now ready for the change. At Saturday noon, this night shift, after a rest of six hours, again reports for duty, and works until 6 p. m., which, you will notice, after another rest of 12 hours, places it on the day shift ready to begin the new week. That shows that our men in the blast furnace business, which is continuous, never work longer than 12 hours at a stretch.

SENATOR McCUMBER. I should like to ask you a question about the character of the ore that you get in New Jersey, in what form it is, and the process that is necessary to produce the iron from it.

MR. PECKITT. There is a wide difference between the iron ores in the Lake Superior region and those to be found in New Jersey. The ores in Lake Superior are largely what are known as hematite ores. Those that we have in New Jersey are magnetites. The only difference between the two varieties is that the magnetite has a little more oxide than the hematite. The magnetic ores are usually found pretty deep underground. Our mines are down now about 800 to 1000 ft. They are in what are known as veins, stratified vein formation, in between hanging and foot walls of granite and silicious rock.

SENATOR McCUMBER. It is not mined in a granulated form?

MR. PECKITT. Oh, the ore itself is brought out pretty much as a solid mass. We break it down with dynamite and powder, and we then bring it up; and, depending on its composition as it comes out, we either ship it directly to the furnaces after crushing it, or we separate it.

SENATOR McCUMBER. On the average is the cost of the

iron from the ores in the eastern sections more than for obtaining iron from Lake Superior ores?

MR. PECKITT. I should not like to speak about the Lake Superior sections, because I never have been engaged there. But the average cost of producing iron ore in the State of New Jersey I should say would be from \$2 to \$2.25 per ton, based on a finished ton of merchantable ore, running from 52 to 60 per cent. of metallic iron.

SENATOR McCUMBER. What I want to get at is this: Does it cost more to produce a ton of pig iron from the iron ore in the eastern section than it costs to produce a ton of pig iron from the Lake Superior ore?

MR. PECKITT. Yes, sir; in some sections of the west they can produce cheaper than we can, on account of their fuel, perhaps. They may have cheaper fuel than we have. We have a long haul on our fuel from the Connellsville district, and the freight on that alone is \$2 a ton on the coke. So our cost of manufacture is higher than their cost, I assume.

SENATOR McCUMBER. The importation from Cuba enters into what sections of the United States?

MR. PECKITT. Very largely to the Bethlehem Steel Company at South Bethlehem, Pa., and to the Pennsylvania Steel Company at Harrisburg.

SENATOR McCUMBER. Would there be any great increase in the importation from Cuba if we should take off the duty of 15 cents per ton?

MR. PECKITT. I do not think so.

SENATOR McCUMBER. Very well; then if there would be no gain in taking it off, what objection would there be to leaving it on?

MR. PECKITT. Only the general principle that has been in favor of using foreign material rather than our own material.

SENATOR McCUMBER. But I understand that the ore from Cuba would only be used in certain sections and in very limited quantities in the United States; we are obtaining some revenue from it, and the industry would not be injured by that importation?

MR. PECKITT. Oh, I think you are quite right there, sir.

SENATOR SIMMONS. Let me ask you this question: Do you think the small duty that there is on iron ore now, especially Cuban ore, where we get most of our importations, affects at all the price of iron ore in this country?

MR. PECKITT. No, sir.

Statement of James A. Campbell, Representing the Youngstown Sheet & Tube Company, Youngstown, Ohio

MR. CAMPBELL. My subject is wrought iron pipe; but before I speak of that I want to devote just a minute to clearing up some things with reference to ferromanganese. Ferromanganese has been coming in under the same duty as pig iron. The independent manufacturers of steel are all users of ferromanganese, but not to any large extent. Our company uses from 4,000 to 5,000 tons a year, and a number of other companies each use from 400 to 10,000 tons a year. There is not one of the independent companies that is large enough to operate a furnace or to build a furnace for the purpose of making ferromanganese. If this bill becomes a law, and the duty is raised to about three times what it is now, and ore comes in free as provided by the bill, we will be obliged to get together and smelt foreign ores in some way, or build a furnace on purpose for it. If the object is to force the manufacture of ferromanganese here, you will accomplish that purpose. If the object is to raise revenue, you would raise much more revenue by leaving ferromanganese in with pig iron, and obtaining the same duty. I do not know what the object of the bill is in making the ore free and in raising the duty to about three times as much as it has been on the finished product.

SENATOR SMOOT. They just made a mis-guess. That is all.

Reasons for Protesting Against the Bill

MR. CAMPBELL. I am here representing a number of the independent pipe manufacturing companies, some of whom make pipe from their own ore and coal to the finished product, and some of whom buy their skelp and plates and make it into pipe. House bill No. 18,642, we understand, proposes to reduce the duty of \$20 per ton in the Payne act to 20 per cent. ad valorem, or what would be equal to \$6 to \$8 per ton, in the Underwood or present bill. We wish to respectfully protest against this bill for the following reasons: 1. The cost of assembling our

raw materials here is much greater than abroad, due to the long distances we transport our ore and coal, and consequently our cost of production is much greater.

2. Pipe is a highly finished product, passing through a number of different operations (namely, mining the ore and coal, smelting into pig metal, converting into steel, rolling into skelp or plates and making into pipe, threading the pipe and making and threading the couplings), and for this reason carries a high labor cost, or, as nearly as we can estimate including transportation labor, about \$20 per ton. This cost is about twice that of the foreign maker and places us and our employees at a great disadvantage.

3. Our cost of transportation of the finished product from the Pittsburgh district, which is the center of production of this commodity, is greater than from abroad; greater to Boston, New York and Baltimore by \$1 per ton, to Gulf ports by \$3.50 per ton, and to Pacific coast and Texas points by about \$8 per ton, so that our delivered price must necessarily be much higher than that of our competitors abroad, if there were no duty imposed by this country.

4. We are opposed to ad valorem duties and in favor of specific, for the reason that goods are many times underbilled in order to reduce the duty, and further for the reason that when values are normal here they may be low abroad, and this method of assessing duties would be very harmful to us.

5. If this bill should become a law, and we should lose a large part of our business at seaboard points, as we surely would, our operations would necessarily be curtailed and our costs would correspondingly increase, as it is a well-known fact among manufacturers that only when operating to capacity can we produce at the lowest cost.

6. Many of the foreign makers are as well equipped with modern plants and machinery as we are, for within five years several plants have been designed and erected abroad by American engineers with American machinery.

7. The pipe manufacturers as well as all steel companies are operating at a less profit at present than can be continued for any great length of time, and if this bill should be passed by your honorable body and the President approves it, many of these companies must go out of business or be forced into the hands of a receiver.

Must Have Some Protection

If it is true that our cost of assembling raw materials and delivering our finished product is greater, as we have stated, and that our labor is about double that abroad, it should be clear to every one that we must have some protection to enable us to compete with our foreign neighbor. This country was developed under a protective policy and, while we need less now than during our infancy, our employees are not yet ready to live as the foreign laborer lives.

SENATOR SMOOT. You would like the rate high enough so that this country could not be the dumping ground of the balance of the manufacturers of the world?

MR. CAMPBELL. Absolutely. You cannot make a rate that will suit the conditions to-day and have it suit the conditions perhaps in two or three years from now; because to-day the conditions abroad are such that they are getting fairly good prices for their product, and their people are all well employed at better wages than under ordinary conditions. Besides, their freight rates are higher on their boats, because they are doing more business from those exporting countries.

SENATOR HEYBURN. We do not want to have to find out every morning what the cost of production is in Germany.

MR. CAMPBELL. No. We cannot change our tariff overnight, as they do in Canada. If we could it would not make so much difference, because if we found they were having bad conditions over there and had reduced the price \$5 a ton, we could increase the tariff and shut them out; but we have got to make a tariff that will cover all conditions if we are going to have protection. We do not know what duty is necessary to protect capital invested and our employees, as we have not the exact cost of producing these products abroad, but we are quite sure that if this bill becomes a law it would mean a revolution in business in this country and that labor of all kinds would suffer equally with capital.

What Is to Become of Small Companies?

The Youngstown Sheet and Tube Company, which is the company I particularly represent, has invested \$25,000,000 in a new and modern plant, and gives employment to 7500 men and, owning its own raw materials and with the best equipment possible, it is in a better position to compete under all conditions than many of the smaller and older concerns. If we cannot operate under this proposed bill, what is to become of the hundreds of smaller com-

panies who are giving employment to hundreds of thousands of workmen all over this country? We manufacture sheets and also wire products. This bill proposes to radically reduce the duty on these products, or place them on the free list, and we protest against these reductions as well. We are in favor of as small a duty as will protect capital and labor in this country, and did not object to the Payne bill, radical as it was.

SENATOR HEYBURN. What do you mean by "protect," because that is a word that is juggled with a great deal, and I would like to get the understanding that the trade has of it?

MR. CAMPBELL. I mean a duty that will give the capital invested the ruling or reasonable rate of interest in this country, which you know is higher than it is abroad.

SENATOR HEYBURN. When you put it on the basis of a reasonable profit, you might just as well ask the Government to insure you a reasonable profit. It is a dangerous position for the trade to assume. I merely suggest it to you, that you may say what you choose about it. The rule is that we should control our own market, and that the tariff shall be high enough to do that, if it has to be seven times higher than is actually necessary.

MR. CAMPBELL. That is right; and it will have to be higher than is actually necessary under some conditions, because the conditions are changed so radically in different years. We are in favor of as small a duty as will protect capital and labor in this country, and did not object to the Payne bill, as radical as it was, in revising the iron and steel schedule, but we believe no further reductions of this schedule should be made until the Tariff Board has had time to make a thorough investigation of the costs of producing these materials in this country and abroad, and the Congress can have all the facts to frame a bill in accordance therewith. Then, and only then, will we be content to leave this matter to the judgment of the Congress and the President to decide what is best for the country as a whole.

Labor Costs

I have not brought all of our labor costs, because I have not had the others, and I did not think you would care for it. But we are perfectly willing to give you any facts you want that will help you or assist you in any way that we can, even to giving you the costs of all of our products.

At present labor is well employed in this country at the highest wages ever paid, while the capital employed is receiving scant remuneration. Any Congressman who votes to change this condition for the worse will be held accountable in the future when these two forces come to realize what such a vote means to them. The country as a whole is prosperous, and the people are happy and contented. Why disturb this prosperity and happiness by passing this bill, which is based on theory instead of facts?

When your Tariff Board has had time to bring you the information, it will then be time enough to determine what changes can be made that will be beneficial to the people as a whole; and any bill based on this information will be satisfactory.

To-day I have found some statistics on labor abroad, in a report published in 1909, by the Department of Commerce and Labor; and on pages 22 and 23 you will find the wages paid in Germany which substantiates the statements I have made that the wage of labor abroad is not over one-half of that paid in this country.

This report states that coal miners' wages in Germany are 97 cents to \$1.43 per day, and overhead workers 93 cents per day, which you all know is less than half that paid in this country. It then goes on to say that rollers in the Dortmund district are paid \$3.05 per day, while we pay \$7 to \$13 per day; pipe welders, \$2.50 per day, while we pay \$5 to \$7; common labor, \$1.08 per day, and we pay \$1.70 to \$2 per day. In the Aix la Chapelle district they pay pipe welders \$1.72 per day. They pay chargers \$1.06 per day, and we pay \$2.50 to \$2.75. They quote common labor as low as 48 cents per day, while our minimum is \$1.70. This report does not give the wages paid trades people, such as machinists, carpenters, bricklayers and electricians, but my information is that the more skilled the labor the less they pay in proportion to the wages paid here.

This information with reference to labor, together with their low cost of assembling their raw materials, due to those materials being close to the manufacturing plants, shows that they can produce finished pipe at much less than be done in this country; and with their low ocean freight, especially to Pacific coast points, in comparison with our freight of \$13, proves that we need approximately the present duty to enable us to compete. If even the Pacific coast business goes abroad it would be a serious blow to American capital invested in steel plants and railroads as well as to the workmen engaged in operating both.

Statement of W. H. Rowe, President of the Pittsburgh Steel Company

MR. ROWE. Our attention has been drawn to the provisions of the Underwood tariff bill so far as they affect the following steel products: Wire rods and wire, wire nails and fence staples, barbed wire and fabricated wire fencing, baling wire and bale ties, hoops, bands and cotton ties.

Daily Earnings of Labor in American Mills.

	Rod mill.	Wire mill.	Galvanizing mill.	Field fence mill.	Nail mill.	Barbed wire fence mill.	Hoop, band and cotton tie mill.
Piece workers.....	\$8.87	\$4.24	\$3.33	\$3.60	\$2.85	\$3.75	\$3.21
Day labor.....	1.65	1.93	2.03	1.92	1.79	1.92	2.07

Contrast the rates paid rod rollers, which are the highest-priced skilled workmen in the wire mills, with those paid by the German mills. The report by Charles M. Pepper, special agent of the Department of Commerce and Labor, Washington, D. C., entitled "Iron and Steel Trade in Germany," gives the average worker's earnings, which, reduced to a day basis, gives the best workers of the wire mills \$2 per day, and the ordinary day laborers 84 cents per day. The scale of wages paid in the other departments covering the manufacture of wire products we are unable to find quoted, but they are proportionately lower than the rod mill labor, which represents the highest skilled labor employed in the art of manufacturing wire.

The best and latest type of rolling mills and wire producing machinery has been introduced into Germany, so that their tools are as good as ours, with a very much lower labor cost to operate them, and with really as great a personal efficiency on the part of their workmen as that shown by our workmen.

Extent of the Wire Industry

The total business of the wire industry is represented by an approximate tonnage of 2,500,000 tons per annum, representing in value \$100,000,000. This industry in all its different ramifications employs about 100,000 people, consequently supporting about 500,000 persons. The above tonnage covers a complete line of wire products, from the coarsest wire used for telegraph, telephone, nail and fencing purposes, to the fine and delicate wire used in the manufacture of pianos, and the finer wires entering into a thousand articles for daily use.

Of the 1200 tons daily output of the Pittsburgh Steel Company, which I represent, 1000 tons is put on the free list under the Underwood bill. As our wire products are all of the heavy varieties, entering into the manufacture of market wires, wire nails, field fencing, barbed wire fencing and hoops, bands and cotton ties, our company, representing an investment of \$20,000,000 and employing 5000 men, would find itself seriously embarrassed by the placing of the above mentioned products on the free list.

I strongly urge and recommend that in applying the tariff to all metal commodities a specific duty be used instead of an ad valorem, as it lessens the chances of error and eliminates the temptation on the part of both buyer and seller to undervalue the goods.

I speak for our own company and for other manufacturers in the United States making the same articles. They are manufactured mostly in the North and central West. Considering the low sea freights from Belgium, Germany and Great Britain, it is impossible for our manufacturers to compete on equal terms on the Atlantic and Pacific seaboard and in Gulf territory. To illustrate, the ocean freights on these commodities from the countries mentioned average about \$2 and \$2.50 per ton. The lowest rail and water freight rate obtainable from the Pittsburgh district to Galveston, Texas, on cotton ties is \$5.20 per net ton, and when shipped all rail the rate is \$7.50 per net ton. The lowest rail and water freight rate to Galveston from the Pittsburgh district on nails, barbed wire and woven wire fencing is \$6.20 per net ton.

SENATOR SIMMONS. Are there any plants manufacturing these things nearer Galveston than Pittsburgh?

MR. ROWE. There is a plant situated at Birmingham, Ala., and one at Atlanta, Ga.—Mr. Rose's plant.

SENATOR SIMMONS. You have not the freight rates from those points?

MR. ROWE. Mr. Rose is here from the Atlanta Steel Company and at the conclusion of my remarks I am going to ask the chairman for permission to call on Mr. Rose to explain some matters in the southern territory that I am not as familiar with as he is.

If shipped all rail, the rates are, per net ton, as follows: On nails, \$12.70; barbed wire, \$11.20; fabricated wire fencing, \$13.10.

As most of these products have for several years past been sold to the consumers throughout our country at

lower prices than ever before, considering wages paid to labor, and at prices so near to cost as not to give either a fair or a reasonable profit to the average manufacturer, there is no commercial reason why foreign products should be admitted free of duty.

The Seaboard Market Would Be Lost

Owing to the low sea freights available to the foreign manufacturers all of the American manufacturers, with the exception of a very few, will be compelled to yield the seaboard markets to the foreign manufacturers. If these markets are yielded to the foreign manufacturers the amount of output of these commodities in our country will be proportionately reduced and to such an extent as to materially increase the cost of the remaining output of American factories, and it will compel many of them to close down entirely. This will be far-reaching, both as to capital and labor, as there are at the present time over 50 different companies engaged in the manufacture of the above mentioned commodities.

As to cotton ties, they are used almost exclusively in the Atlantic and Gulf States. They are manufactured almost exclusively in the North and central West. Comparing the sea freights available to foreigners with the freights available to American manufacturers, the inevitable result of placing them on the free list will be what it was under the Wilson tariff—to close down all of the cotton tie mills and allow the foreigners to have the market to themselves.

If the users of cotton ties were paying an excessive price for them there might be some justification for what is proposed. But on the contrary, they are getting them at a price so low as not to allow a reasonable and compensating profit to the manufacturer, even under existing conditions. In addition to this, if cotton ties be put on the free list the same ties can be re-imported at the mere cost of sea freights, under which competition the American manufacturers cannot exist.

Cotton Tie Business Unprofitable

SENATOR SIMMONS. You say you are not now getting an adequate profit on cotton ties?

MR. ROWE. No, sir.

SENATOR SIMMONS. Why are you not doing so now? You have a duty now.

MR. ROWE. Owing to the low price prevailing, not only at the present time but for the last two or three years, our company has about decided to discontinue the manufacture of them altogether and run our mills on some other product.

SENATOR SIMMONS. Tell the committee, if you can, why it is that you cannot get now, with your tariff protection, a reasonable price for your cotton ties?

MR. ROWE. I presume it is due to the large output of this commodity.

SENATOR SIMMONS. Is it a fact that you are producing more than the market needs?

MR. ROWE. I presume there is a greater producing capacity than the market needs.

Our markets on Gulf ports and the Atlantic and Pacific seaboard from Portland, Maine, to Portland, Ore., and for an average distance of 100 miles inland, will be open to the invasion of the foreign manufacturer and in addition they can go up the St. Lawrence River through the Great Lakes as far as Duluth; also they can ascend the Mississippi River to St. Louis or even to St. Paul on equal if not better terms. Thus you can see the tremendous effect upon the American manufacturer of handing over to the foreigners all the advantages in trade and competition.

If this emergency is forced upon the American manufacturers there is only one way they can live, and that is by forcing the labor employed in manufacturing, mining and transportation to the low wages paid in the foreign countries. For these reasons we most earnestly protest against the provisions of the Underwood tariff bill placing the products above mentioned on the free list not only in behalf of our manufacturers but also in behalf of our splendid body of intelligent workmen, who have a right to live according to American standards of life and whose conditions we desire to improve rather than degrade.

Competition Among Manufacturers

SENATOR SIMMONS. Is there any serious competition in the matter of the fixing of prices of these products between the domestic producers in this country?

MR. ROWE. There is very great competition. As I stated before, the cotton tie situation is so bad that we have about decided to withdraw from that business because it is so unprofitable.

SENATOR SIMMONS. There is competition of two sorts, I think; there is competition as to prices and there is competition as to customers. Is the competition as to prices

or as to customers? That is to say, are the prices somewhat uniform throughout the country?

MR. ROWE. Not any more so than all other manufactured commodities. I should like to say in that connection that I have personally sold barbed wire at 6 cents a pound for painted and 7 cents a pound for galvanized. Under a high protective duty those commodities have been gradually cheapened in cost, and to-day the American farmer is getting the finest grade of steel in his wire, manufactured on more scientific lines than ever before in the history of the country, and he is paying to-day 1.55 cents for painted and 1.85 cents for galvanized wire. That is the price for which we sell to the dealers and they in turn sell to the other dealers and consumers.

SENATOR SIMMONS. I do not think that exactly meets my inquiry. If I, as a consumer of nails, were to write you a letter to-day for prices, and at the same time were to write a letter to each of your competitors for prices, would they or not quote me the same price?

MR. ROWE. I know what I would quote, and perhaps I might get your order and perhaps I might lose it. On the next inquiry I might lose it and the other manufacturer might get it. I think I know what you want and I think I can answer it rather intelligently. Never during the long years of experience I have had in the wire business have I ever known where there were absolutely uniform prices. That, I think, will answer your question. The price situation, from my experience and viewpoint, is one largely regulated by the laws of supply and demand.

SENATOR SIMMONS. They may not be absolutely uniform. I do not suppose there are absolutely uniform prices as to anything. But what I want to know is if there is not substantial uniformity of price throughout the country?

MR. ROWE. I regret to say that that is not the case.

SENATOR SIMMONS. Have you taken the trouble to ascertain the extent and amount of importations of the products that you produce to this country during the year 1911, say?

MR. ROWE. We have been doing very little if any export business. For that reason our attention has not been devoted in the direction of foreign commerce. We have a very large business and our time is very much employed in looking after it in this country.

The Export Trade

SENATOR SIMMONS. How is it that our manufacturers of these things are able to go to Europe and to Germany and there sell those things in competition on their own ground with the German and the English manufacturer?

MR. ROWE. We tried that several years ago and we found that the foreign rates absolutely prohibited us from selling barbed wire even into Cuba.

SENATOR SIMMONS. But your competitors seem to be doing it and seem to be selling large quantities.

MR. ROWE. In my judgment 90 per cent. of the steel products that are exported from the United States are exported by the United States Steel Corporation; and it is able to get much lower rates than ourselves or other manufacturers. Owing to its great diversity of products it can charter vessels, and, by combining these cargoes, it will make a shipload of barbed wire, wire nails, tubes, tin plate and practically all the lines represented in the industry. I believe that by chartering those tramp vessels it can reduce the freights to those foreign countries to about one-half of what the other manufacturers can get; and I must confess that as an American citizen I am surprised at the lack of legislation on the part of our statesmen to give us a merchant marine. I believe the United States Steel Corporation is enabled to do all of the export business that is done in the United States on account of its chartering vessels at a very nominal rate.

Statement of D. J. Driscoll, Reading, Pa., Representing the Delaware Seamless Tube Company, Auburn, Pa., and Others

THE CHAIRMAN. Can you give the committee a list of the firms and corporations you represent?

MR. DRISCOLL. The Pittsburgh Steel Products Company, Pittsburgh Seamless Tube Company, Ohio Seamless Tube Company, Globe Seamless Tube Company and Delaware Seamless Tube Company.

SENATOR SMOOT. Please make a brief statement as to what seamless tube is.

MR. DRISCOLL. Seamless steel tubing, under the Dingley act, was protected by a duty of 35 per cent. ad valorem. The Payne-Aldrich act reduced it to 30 per cent., and the present bill reduces the duty to 20 per cent. The manufacture of seamless steel tubing is comparatively a new industry in this country, and is practically in an undeveloped state. There are seven manufacturers of this class

of tubing in the United States, with a total capacity of 100,000 to 125,000 tons, or about five per cent. of the total tube production of the country.

Germany Our Chief Competitor

The pioneer and leader in the manufacture of seamless steel tubing is Germany. She has developed and brought its manufacture to a high state of perfection; and the length of time she has been manufacturing has trained a great number of hands skilled in the art. This fact, together with her low labor cost, which is about one-third of what it is in this country, enables her to produce tubes at a cost so low that she competes with us even with the present duty of 30 per cent. ad valorem.

Seamless steel tubing is a product that must, of necessity, eventually supersede lap-welded tubing for all high-pressure work. It has been adopted and is used exclusively in the boilers of the vessels of the United States Navy, and is being adopted by the navies of practically all nations. Being without seam or weld, and produced from a solid billet direct, there is not that danger of bursting under severe pressures that is always present in a welded tube.

In the past three years there has been a reduction in the selling price of this class of product in this country of over 40 per cent.; so that at the present time there is practically no profit in the business. If it is to expand and grow, instead of a reduction in duty to 20 per cent. ad valorem it should have either the present duty of 30 per cent. retained or that of the Dingley act of 35 per cent. substituted.

We feel confident that a full investigation and comparison of the labor situation in the seamless tube mills in this country and in Europe, especially Germany, will verify the fact of our great handicap both as to quantity and cost of labor. We ask that at least the present duty of 30 per cent. be continued, and that seamless steel tubing be kept in a class separate and distinct from other tubing.

THE CHAIRMAN. You say this is a new industry in this country?

MR. DRISCOLL. It is practically new—that is, in comparison with the lap-welded business.

THE CHAIRMAN. When you say "new," how many years old is it?

MR. DRISCOLL. I think I was the first one to produce a seamless steel tube from American stock in this country. That was in 1896 or 1897. But I am a small producer, with limited capital, and have always hoed my own row.

SENATOR SMOOT. Do you know what the difference is in wages in this country and in Germany?

MR. DRISCOLL. I think the comparison, roughly speaking, is as follows: In Germany it will cost from about \$11 to \$15 a ton to produce, generally speaking, a ton of seamless steel tube. In this country it will run from \$30 to \$45 a ton.

SENATOR SMOOT. About what is the average cost per ton?

MR. DRISCOLL. The selling price of the tubing three years ago was, say, about \$100 a ton. To-day it is between \$60 and \$70; and you buck up against German competition. They will quote German prices to you.

Further Statement of James A. Campbell

MR. CAMPBELL. We are interested in the wire business. We make about 400 to 500 tons a day of wire products. For several days the gentlemen here have been trying to get an explanation as to why we can export all kinds of steel products into other countries and yet cannot compete on a free trade basis at home. I think I can perhaps throw a little light on that subject. All of this exporting is done by the United States Steel Corporation. It has an Export Products Company which has agents in all of the principal cities in the foreign countries, especially in all of the neutral markets.

Why the Steel Corporation Can Export

SENATOR WILLIAMS. Do you make the statement that all of the exports of steel and iron products in the United States are made by the United States Steel Corporation?

MR. CAMPBELL. Nearly all; 98 per cent. I should say that it must export about 98 per cent.

SENATOR WILLIAMS. Agricultural implements, sewing machines, typewriters, etc.?

MR. CAMPBELL. No; I am talking now only about the products we manufacture—iron and steel products. I think a large quantity of agricultural implements are exported from this country because it has better machinery than they have abroad. But the products in which we are interested, and that we have been talking about yesterday and to-day here—that is, steel bars and pipe and wire, wire nails, barbed wire, etc.—are exported by the United States Steel Corporation. It is a well-known fact, among the steel manufacturers at least, that the Steel Corporation has many advantages of manufacture. It largely comes, I

think, from transportation. It owns its own railroads and its own boats to its mills. It also owns, of course, all of its raw materials; and it has several dollars a ton advantage over the independent manufacturers or we people who are running our own single plants. Not only that, but the corporation has it localized. It has plants in all parts of the country, in the South and in the Chicago district and in the Pittsburgh district, and it has formed this export company—

SENATOR HEYBURN. Has it any abroad?

MR. CAMPBELL. I think not. It will have one, however. I think the next move it will make will be to have one on the seaboard, because it has accumulated a large quantity of Cuban ore. But, as I say, in the first place it has this advantage in manufacture. In the second place—

SENATOR SIMMONS. Do you mean it has bought Cuban mines?

MR. CAMPBELL. They are not developed yet. The corporation is operating the mines, but they have a very large tonnage—several billion tons.

These exportations, as I say, have been made by the Steel Corporation. It makes them because, in the first place, it has a very large tonnage and it wants a market for this tonnage every year. It would not care for the foreign markets in good years at home, when business is good and prices are normal and they can get a home market. But it cannot go into the foreign markets in bad times and get any business unless it is willing to sacrifice some of its product in good times. So it has organized this company and has its agents and keeps them there continuously. In good years it sells much less. It sells as little as it can, but it tries to keep its place in the market there so that in the bad years such as we have had recently and are having now, its exportations are very large.

Many times it sells this product at very much less than it costs us and I think sometimes less than it costs the corporation, or less than it could get at home. But when business is good abroad as it is at present, and prices are very much depressed here, and we have not the business to take up the capacity of the mills, then is when it makes its money.

Defends Sales Abroad Under Home Prices

There has been great complaint among Congressmen generally because we export at lower prices than we sell for at home. I do not think you ought to complain about that. Unless we operate our mills to their full capacity we cannot get the best costs. If we can sell 80 per cent. of the capacity of our mills at home and get a fair price for it, and we can sell 20 per cent. abroad and get cost for it, it enables us to operate our mills full and produce the product that we sell at home at a lower price than we would otherwise. Not only that; it gives employment to our labor here and even though we make no profit on it at times we would be glad to export.

We do not do any exporting and none of the independent companies does any exporting to speak of, because we cannot afford to do it. We cannot make the stuff cheaply enough, in the first place. We cannot combine the cargoes. We have not the large line of different kinds of material that the corporation exports, and for that reason I think there is this large amount exported abroad. I think you are mistaken about any large amounts going into the cheaper markets on the other side, like Germany. I think Senator Penrose has stated that sometimes it is billed to those countries and shipped to South America or to Australia or to other points, re-billed. They do that because they get lower freight rates in that way.

Statement of Josiah T. Rose, Representing the Atlanta Steel Company, Atlanta, Ga.

MR. ROSE. In appearing before you I represent primarily the Atlanta Steel Company, a corporation with approximately \$2,000,000 invested in buildings and equipment, employing 750 men with a daily payroll of \$1,500, or approximately \$500,000 a year, with gross sales amounting to about \$1,500,000. We make wire, wire nails, fencing, bale ties, barbed wire, hoops, cotton ties and bands. The so-called Underwood tariff bill puts on the free list articles which we and some other Southern manufacturers produce, as follows: Wire, wire nails, barbed wire, field fencing, bale ties, barrel hoops and cotton ties. A glance at these will show that they are the small tonnage products of a steel mill where the number of workmen per ton of product produced is great and the payrolls form a large percentage of the gross sales. Our workmen are, therefore, most vitally interested in this measure as well as our stockholders. We have an investment at stake but most of the buildings, especially those where the small products are made, could be used for the manufacture of some other finished article, while in the case of the workmen in the

mills producing these light articles they will be unable to make as satisfactory a change. Operators of wire drawing blocks (wire drawers) seem not to be made—they grow, and when matured they know no other work and have no desire to learn another trade. They would, therefore, be unfitted for any other class of semi-skilled labor. It also takes years of practice and experience to develop skill and accuracy in the heating, rolling and bundling of hoops and cotton ties, and because of the time and skill required these men have reached middle age, have been receiving high wages and would be unfitted for other work. The effect, therefore, of forcing hundreds and thousands of these men to begin life anew would work a great hardship on our American labor.

Injustice of Making Light Steel Products Free

Germany is this country's greatest competitor in products where labor enters largely into the articles produced. The manufacture of the light steel articles, which it is proposed to put on the free list, is no exception to this rule. If you have seen a wire and nail mill in operation you have a fair idea of how much of a workman's time it takes to draw a ton of wire and how much care and time it takes for a nail machine operator to watch the making of a ton of this wire into nails. If you have seen a small rolling mill rolling light hoops and cotton ties and noted the number of men it takes in the heating and rolling and bundling of this material and realize that the output in a nine-hour day is but from 30 to 50 tons, you can realize what a large item of cost the labor represents.

You have been given information regarding the wages paid in this country and in Germany. It cannot be assumed that we can overcome this difference in labor cost by an increased production of these small steel articles. The foreign producer uses, in many cases, the same machines as we use, running at the same speed, and therefore the difference in the cost of labor abroad and at home in the production of these small steel articles must be overcome by protection sufficient to equalize this difference in labor cost. Give us the same labor cost and satisfied workmen and we will produce even these small articles, probably, as cheaply as any other country. But cost of production, f.o.b. mill, is not all, even though it is enough against us. I am told that an ocean rate of approximately \$2 per ton can be secured from the German mills to our Atlantic and Gulf ports. How much less rates could be secured on yearly contracts for large tonnages would no doubt develop should this bill become a law. Rates from American mills producing these articles for shipment to Atlantic and Gulf points range from about \$2.80 to \$6.70 per ton.

Freight Rates to the Southwest

On account of our location, and on account of there being no regular, established boat lines either from Atlantic points or from Gulf points, like Mobile and Pensacola and Galveston, we are forced to ship from Atlanta to Galveston by all-rail. Therefore our rates are higher than the rates from Pittsburgh, being shipped to tidewater with regular boat lines running from tidewater to Galveston, and we are obliged because of that to turn practically all of the Texas business over to our Pittsburgh competitors.

These rates are the lowest rail and water combination rates, and in order for the manufacturer to secure the advantage of them he has to ship his products to the same ports where foreign goods would be delivered and in turn re-ship them from these ports to the interior points—this means that the American manufacturer would not only be practically shut out from all port business but would have to surrender a large percentage of interior business to foreign manufacturers. It is true that some interior rates are at present figured on the all-rail rate, but the tendency of State railroad commissions is to reduce rates within their jurisdictions—

SENATOR SIMMONS. Right there, will you permit me to ask you a question? Suppose we take Galveston for an illustration. You want to reach the interior points of Texas, we will say, and the adjoining States. You say you can ship cheaper by all-rail than you can by water to Galveston, and then distribute from Galveston?

MR. ROSE. Yes, sir.

SENATOR SIMMONS. How would your all-rail rate compare with the rate from Europe to Galveston plus the rate of distribution from Galveston? Of course the European manufacturer would have to take his product to Galveston?

MR. ROSE. If we have got to pay \$7.60 a ton to get into Galveston against their \$2.50, we cannot get in. I was mentioning the fact that the tendency of State railroad commissions is to reduce rates within their jurisdictions. Therefore, from year to year a larger section of our country will use port points as basing points for in-

terior distribution, and not only will our coast be surrendered, but a large part of our interior also.

Danger of Depending on Foreign Supplies

What will we gain, as a people, by all this? Possibly a short period of slightly lower prices. Jobbers and retailers will have to carry larger stocks, as they will be unable to secure shipments promptly, or the farming community, in whose interest evidently this bill is proposed, will have to wait till the jobbers can secure foreign-made material. Nails and wire must be had at seasons of the year when the farmer can use them, but the exact time depends upon weather conditions. This is also especially true of the use of cotton ties. The history of the cotton tie market the year following the passage of the Wilson act, with ties on the free list, and yet the price of foreign-made ties, the highest ever known, is not forgotten by the consuming trade.

As a Southern producer we appeal to you to give us the protection on which we based our calculations when starting our industry. Our Southern mills especially need it at this time, as we are asking capital to join with us in the development of our resources.

Statement of Severn P. Ker, of the Sharon Steel Hoop Company, Sharon, Pa.

MR. KER. Due to insurmountable physical defects, I appear before you without any brief or written statement, to protest in the name of our company and my fellow manufacturers of hoops, bands and cotton ties against the proposed Underwood bill. I represent primarily a small steel company, as steel companies go. We employ about 1100 men. We are among the smaller manufacturers of cotton ties, large manufacturers of hoops and bands. Under this proposed bill cotton ties, and strips of iron or steel for baling purposes, described in great detail in the bill, are put upon the free list. They now enjoy a duty of \$6 per ton, three-tenths of a cent per pound.

The difference in the cost of manufacture, in my judgment, is not covered by the present tariff rate. Conditions abroad in the iron and steel business have been prosperous; in this country they have been depressed. The foreign maker has not found it profitable or interesting to him to undertake to invade our markets at this time with his products to any great extent, because he can get more for his products elsewhere.

Output of Cotton Ties Last Year

MR. KER. There were produced in this country last year—and I think I am within 1000 tons of the correct figure—52,000 tons of cotton ties, for a crop of about 15,000,000 bales, or a little over. It is usual to figure the requirements of cotton producers by stating that we used to consider the maximum production capacity of 10,000,000 bales, as requiring 45,000 tons of cotton ties. However, the American manufacturer does not make each year all of those cotton ties, even if he enjoys the entire market, because there is a percentage, probably 10 to 20 per cent., depending upon conditions, of reworked and pieced ties used. So that this year we would have produced over 60,000 tons had we enjoyed the entire market; we really produced about 52,000 tons.

Cotton ties have been exceedingly low, so low that our own company, with thoroughly modern mills on which cotton ties can be rolled—8, 9 and 10-in. mills, the best types in the country—has not found it profitable to embark in the cotton tie business to any extent. This year we made 105,000 bundles of cotton ties, while we have been industriously seeking orders for other commodities. The price of cotton ties has generally been exceedingly low. There is less excuse, in my judgment, for placing cotton ties on the free list than almost any other line of steel product; certainly any other in which we are interested as a company.

I believe in protection to the American workman and the American investor in an amount that is sufficient to hold to this market, the greatest market in the world, the American goods. I believe that we should protect our industries enough to prevent the dumping of foreign goods into our country whenever, in times of depression abroad, they attempted to run their mills full at the lowest cost of production, because that is the only way to produce cheaply, and to dump their surplus material here to the detriment of our own citizens. We have built up a standard of living in America that is all American. We pay our common laborers the highest price that has been paid since I have been in this business, and I have been in the business 27 years. We are paying \$1.70 for common labor; we pay from that up to \$12 and \$13 a day. Our laborers live on a higher plane than those in Europe, and if it is desirable to bring our people to the European standard of living, I do not understand the purposes of government. I do not be-

lieve that is the intention of either those who advocate this bill or of any others. It would mean a revolution in labor. We could not possibly get our labor down to the European standard unless we would have a revolution.

Danger of European Dumping

We protest against the Underwood bill because we believe that with the reduction of duty on barrel hoops and hoops of that general description from \$6 per ton, for the standard hoop, to 15 per cent. ad valorem, we would be excluded from the coast markets, and the markets accessible to the coast, whenever the conditions of trade abroad and in this country invited the European to dump his surplus product on our shores. The present tariff on hoops and bands, under the Payne bill, is equivalent to an ad valorem duty of 29 per cent. It is proposed to reduce that to 15 per cent. On bands, under the Dingley bill, the specific duty represented an ad valorem equivalent of 60.32 per cent. In the Payne bill, in 1910, the specific duty would represent an equivalent of ad valorem of 36.27 per cent.; and in 1911 of 35 per cent. It is now proposed to make those goods 15 per cent. ad valorem, with all of the tendency, which we know is taken advantage of by the foreign producer, to underbill his goods, and evade a part of the duty. There is not a mill in America that would manufacture these goods at that rate. There is but one way, in my judgment, by which we could arrive at the condition of manufacturing at such a rate, and that would be to pay our operatives the same general scale of wages as is paid abroad. Against that condition we most earnestly protest.

I would like to make a statement in reference to the exportation of hoops, particularly. The hoops exported to South America are not exported as hoops, but are exported as shooks; that is, staves and heads made up in sets, and the hoops necessary for the erection of those packages or barrels in South American ports included with them as one shipment. We cannot—and, so far as I know—do not ship any cut hoops to South America, to the Argentine Republic, where they go largely, as cut hoops; but only ship them in conjunction with heads and staves, and shipped as shooks.

Testimony of C. D. Dyer

MR. DYER (of W. P. Snyder & Co., Pittsburgh). The Lake Superior iron ore industry will not take up the time of the committee in making any special protest against reducing the tariff rate on iron from 15 cents per ton to nothing, except as it indicates a tendency to keep the market on the Atlantic seaboard open for foreign ore to the exclusion of our home product. Generally speaking, the United States Steel Corporation produces and uses about one-half of the production of iron ore from the Lake Superior region, the balance being for the use of what we term the independent iron and steel industry.

Shipments of ore from the Lake Superior region during the year 1911 were about 35,000,000 tons and in 1910 and 1909 they were about equal, aggregating about 42,000,000 tons in each year; and the capacity of the region, measured by its facilities for transporting ore down the lakes, is about 50,000,000 tons.

Imported Ore as a Displacer of Lake Ores

In 1911, 2,000,000 tons of foreign ore entered the United States, the revenue to the Government from which was less than \$300,000.

Practically no Lake Superior ore has been sold in what we term the Eastern market for three years, and if the enlargement of the opportunities of the industry is a matter of concern, foreign iron ore should be subject to a tariff rate of at least 50 cents per ton, which is about 1 cent per unit, as ores are measured in these days. Under such a condition, it would still be necessary for the Lake Superior ore producers in order to do business in the East to make a very considerable concession in the ideas from which they are accustomed to figure the values of their ores.

To indicate the effect upon the general business of the country, as illustrated by the 2,000,000 tons of foreign ore received during the year 1911, and which produced to the Government something less than \$300,000 in the way of revenue, we have made a calculation showing that had the equivalent of this ore been produced and transported from the Lake Superior region, over \$3,000,000 would have been paid directly in wages to American workmen engaged in mining, manufacture, transportation and other pursuits and the national balance of trade would have gained over \$6,000,000 in our favor.

The Increased Cost to Eastern Furnaces

It may be argued, and it is probably true, that a 50-cent tariff rate would have the effect of increasing the cost of the ore mixtures at eastern furnaces; but if so, such increase would about equal the difference between the cost of

production at home and abroad, as is indicated by the market prices of the two products, and the effect would be at least to bring the Lake Superior producer and the eastern furnaceman together to negotiate. The tonnage involved would probably have a large influence in inducing the Lake Superior producer to make some concession, and perhaps the railroads to hold out some inducements to secure the business, as the present tariff rates of the railroads from Lake Erie ports to eastern points are merely paper rates and produce no revenue to speak of.

If we are to keep in mind in any province of business the idea of protection of American industries, the cause of American iron ore presents very convincing arguments in favor of a protective rate, and we think that 50 cents per ton is the least rate which would have any effect in that direction.

Iron Mining Wages Maintained at High Point

I submit the following from one of the largest independent producers of iron ore as a view of the subject from his angle:

"The status of the iron ore situation as far as Lake Superior is concerned is as follows: Since the panic of 1907, following the lead of the Steel Corporation not only at the mines, but at our furnaces, while we have curtailed production and shut down here and there, in no instance has the high rate of wages that has been in existence been disturbed—at the mines, on the railroads, on the vessels or at the furnaces. As a matter of fact the railroads have in the meantime advanced their labor. Roughly, 75 to 80 per cent. of the cost of ore is represented by labor, either at the mines, the railroads, the lakes, or with the supply companies which furnish supplies. We have thought once or twice that we would have to liquidate labor, and have been holding on with the hope of better things, until business would get over the dead center. There is no apparent hope for this in the immediate future, and, with drastic tariff legislation, labor liquidation will be forced upon us whether we wish to consider it or not. The tariff as far as ore, iron and steel is concerned, is no longer a protection to the industry, and not even on the present rates a protection to the labor. If we are going forward on a protective basis, we should at least have sufficient protection to protect the labor, without asking for protection possibly on our profits; and instead of being a protective tariff for the industry it should be called a protective tariff for labor.

Present Iron Ore Duty Too Low

"Under the present tariff the rate on ore is too low, as well as that on pig iron. We have lost the Pacific Coast to the foreigners in almost all departments, and in 1911 about 2,000,000 tons of ore was brought into the eastern market from foreign countries. Assuming this ore to be worth in the neighborhood of \$8,500,000, there was displaced between \$5,500,000 and \$6,000,000 worth of labor to the miners, railroad employees, vessel employees, and others in the Lake Superior iron ore industry. In addition to this our furnaces on the eastern seaboard paid to foreign miners and vessel owners \$8,500,000 which went out of the country.

"In prosperous times, even with the tariff of 40 cents a ton, foreign ore came into the country, but only to the extent that our labor could not produce it. Since the passage of the Payne-Aldrich bill we have, as above mentioned, lost this business that we enjoyed in the east. The States of Minnesota and Michigan have imposed burdens in the way of taxes, which in many cases will run as high as ten cents a ton on the ore produced from certain mining properties. The Canadian Government at the present time is proposing to pay its manufacturers a bounty of \$1 a ton on pig iron, and where the pig iron is made from Canadian ore an additional bounty of about 60 cents a ton, which is bound to stimulate production of iron ore in Canada to a point where there will be a very considerable surplus to be shipped to this country. Every ton of ore and every ton of pig iron imported displaces three tons of ore which could have been mined by American miners.

"Some of the foreign ores are mined by workmen receiving 40 cents a day. This is true in Spain. The miners of Lake Superior in underground work receive \$2.65 per day or more, according to the nature of their work. Therefore we should not only protest strongly against the Underwood bill, but there should be a restoration of the duties on iron ore prior to the Payne-Aldrich bill, and also on pig iron, in my opinion, as its effect will simply be an economic one. International competition will keep the price of iron and ore within reason and in prosperous times there will be both pig iron and ore imported. In times of depression, however, I feel that our own labor should have every consideration and be furnished all the work possible, to the exclusion of the products of foreigners."

Pittsburgh and Vicinity Business Notes

The Duff Mfg. Co., manufacturer of Duff-Bethlehem hydraulic jacks, located on the North Side, Pittsburgh, has secured an option on a large tract of land in the lower part of the North Side with the expectation of building an extensive plant on it. It is probable that the option will be exercised within 30 days, when plans for the new works will be prepared.

The Ohio Seamless Tube Company, Shelby, Ohio, will increase its capital stock from \$432,000 to \$3,000,000. A stock dividend of 300 per cent., or a total of \$1,296,000, will be issued to present stockholders. It has not been definitely settled what action will be taken regarding the issue of the remaining stock. The company has not paid any dividends until recently.

The entire plant of the Diamond Forging & Mfg. Company, Pittsburgh, was destroyed by fire last week. It will be rebuilt at once.

While not definitely settled, it is probable that the new steel plant of the Brier Hill Steel Company, Youngstown, Ohio, will have 12 80-ton open-hearth furnaces, making an output of about 2000 tons of billets and sheet bars per day.

The Strong Mfg. Company, Bellaire, Ohio, manufacturer of high-grade enameled ware, will build a new plant at Sebring, Ohio. The main building is to be 320 x 324 ft. The plant at Bellaire will be dismantled when the new one is finished, and all machinery will be removed to Sebring, so that little if any new machinery will be required. All contracts for the new plant have been placed with the exception of one for an automatic sprinkler. It is proposed to make this a model works. Ground will be available for additional buildings, which are to be erected in the near future for the manufacture of other lines.

The National Tube Company started puddling furnaces in its Republic plant on the South Side, Pittsburgh, February 26. The entire plant had been idle for about two years. The muck bar made at this plant is shipped to its Continental plant at Pittsburgh, where it is made into socket iron, which is then shipped to other plants to be made into sockets. The company is now operating all of its four blast furnaces at McKeesport, its two Riverside furnaces at Wheeling and four out of five of its furnaces at Lorain. The idle Lorain stack is being relined and is expected to blow in about April 1.

At the annual meeting of the Keystone Driller Company, Beaver Falls, Pa., held last week, an annual dividend of 6 per cent. was declared and directors were re-elected as follows: H. H. George, J. D. McAnlis, and R. M. Downie; treasurer, Robert G. Forbes.

The American Sheet & Tin Plate Company will install improved electric crane service in place of the present steam power system in its works at Monessen, Pa.

The H. K. Porter Mfg. Company, Pittsburg, builder of light locomotives, will erect an addition to its machine shop, 100 x 158 ft., three stories.

A new plant for the manufacture of sheets and tin plate is to be built at Apollo, Pa., of which Robert Locke, who recently resigned as general manager of the Allegheny Steel Company, will be general superintendent. The Apollo Sheet & Tin Plate Company, which was incorporated last year, will operate it. Citizens of Apollo have donated a site. The plans call for four sheet and four tin mills. L. G. Fiscus, of Apollo; O. H. Burghman, of Canton, Ohio, and M. G. O'Brien, of Akron, Ohio, are connected with the new company.

The Plymouth Mills, Plymouth, Mass., has appointed John H. Graham & Co., 113 Chambers street, New York, with branch offices in San Francisco, Cal.; London, Eng., and Sydney, Australia, domestic and export selling agents for its well-known brand of Plymouth Mills iron, brass and copper rivets, to take effect from March 1, 1912.

W. H. Hunt and S. M. Hunt have formed a copartnership under the name of W. H. Hunt & Co., 1823 Land Title Building, Philadelphia, Pa., and will engage as general merchants in cast and wrought iron work. W. H. Hunt was formerly general manager of the Coatesville Foundry & Machine Company, Coatesville, Pa.

The Machinery Markets

When the entire country is considered, somewhat better conditions have prevailed in the machinery trade in the week just passed. New York is quieter but has done a fair volume of business, some of it for export, and the trade has before it three extensive lists of requirements. Encouraging conditions exist in the Middle West and South. In New England some manufacturers have experienced a slight increase in activity, with general conditions unchanged, but of a hopeful character and are bidding on a large industrial school list for Jersey City, N. J. There has been better buying in Philadelphia on the part of the railroads against old lists, though trade generally is described as irregular. In Chicago a few small inquiries have been received from Western railroads, but trade as a whole is not what it might be. Cleveland trade is holding up well with an outlook for more and better business. Cincinnati also reports improvements and March is expected to be a good month. Detroit likewise has done a better business, and much is expected from the automobile industry in the near future. St. Louis conditions continue unchanged, with a fair business being done with single tools and second hand equipment. New enterprises in the South are calling for machinery largely of out-door types. Pumping machinery is especially in demand as a result of irrigation developments.

New York

NEW YORK, February 28, 1912.

What activity there has been in the New York machinery trade since the last report has been of the scattered sort and in amounts not notable for size. Most machinery houses found actual business the slowest experienced in several weeks. The railroads are doing little buying at the moment, although the placing of orders by the Delaware & Hudson Company appears to be in sight. Action is expected in a week or ten days. Railroad repair shops throughout the state are nearly all busy, while industrial plants are in many cases running below normal. Two or three New York houses have received good orders calling for the export of special machinery, which for them has made February the best of recent months. There has been a little demand in the last few days for sugar machinery for replacement, but it has been of a routine character. One of the better inquiries received by the trade has been from the Hanson & Van Winkle Company, 269 Oliver street, Newark, N. J., which is in the market for machine tool equipment, orders for most of which probably will be placed through a large dealer. The company manufacturers among other things polishing and buffing machinery. The Allied Machinery Company of America reports good progress abroad. It has just sold to the Eastern Railways of France a 90-in. Niles driving wheel lathe. The order was taken by the Paris office of the company. The New York trade is figuring on an extensive list put out for the Jersey City, N. J., Technical High School.

The Board of Education of Jersey City, N. J., has sent out a list of requirements in machine tools and other equipment for the Technical and Industrial High School, which was received by manufacturers this week. Included are the following tools:

Forty engine lathes, 14 in. x 6 ft.
Two motor-driven geared head lathes, 16 in. x 6 ft.
Ten bench lathes.
One turret lathe, 1 x 15 in.
One Universal grinding machine.
One Universal cutter and reamer grinder.
One cylindrical grinding machine, 6 x 32 in.
Two wet tool grinders.
One 30-in. boring and turning mill.
One 10-in. toolmaker's lathe (Pratt & Whitney).
Four No. 1½ universal milling machines.
Two No. 2 universal milling machines.
One horizontal boring, drilling and milling machine, No. 21, of the Lucas type, or Rochester Boring Machine Company type.
One planer, 22 in. x 6 ft.
One planer, 28 x 28 in. x 8 ft.
Four 14-in. shapers.
Two 16-in. shapers.
Four arbor presses.
Two 21-in. vertical drilling machines.
Four motor-driven sensitive drilling machines (Taylor & Penn Company's No. 1, type A).
One 3-ft. radial drilling machine.
One 15-in. high-speed sensitive drilling machine (Henry & Wright Mfg. Company).
Eleven double down-draft forges.
Four power hack saws.
Ten lathes, No. 4 (Rivet Lathe Mfg. Company) with attachments.
One geared head lathe, 24 in. x 8 ft., motor driven.
Automatic band saw setter and filer.
Hardening and tempering furnace.
Metal furniture.
Electric equipment, including generator and motors.
A large amount of small tools.

The Department of Water Supply, Gas & Electricity of the City of New York, without specifying details, is advertising for the furnishing and delivering of miscellaneous supplies including: Belting, boilers and parts thereof, machinery and parts thereof, metals and alloys, oils and greases, packing, proprietary articles, tools and implements, boiler and pipe covering, electrical supplies, washers, bolts, nuts, rivets and screws, pipes, valves and

pipe fittings and repair parts for hydrants and valves. Sealed bids or estimates will be received by the Commissioner of the Department, Henry S. Thompson, up to 2 p. m., Friday, March 8. Further information regarding the supplies wanted can be obtained at the office of the department, 21 Park Row, together with copies of contract and specifications.

L. Goldschmidt & Sons, Newark, N. J., trunk manufacturers, have secured a tract of land in the Harrison section and is having plans prepared for a new plant which will be equipped with new and up-to-date machinery for the manufacture of trunks and bags.

The Webster Canning & Preserving Company, Webster, N. Y., will build a two-story and basement canning factory and cold-storage warehouse, 105 x 105 ft., of reinforced concrete and structural-steel construction.

The Krossknit Mfg. Company, Huntington, N. Y., has been incorporated with a capital stock of \$50,000 to manufacture knit goods. Samuel A. and Adolph Kross and A. L. Brady are the incorporators.

The Garner Print Works & Bleachery is making plans for the enlargement of its plant at Wappinger Falls, N. Y.

The Curtiss Motor Company, Hammondsport, N. Y., has been incorporated with a capital stock of \$600,000 by G. Ray Hall, Hammondsport, and Monroe Wheeler, Bath, N. Y., to manufacture motors, engines motorcycles and motor vehicles.

The Delac Gypsum Products Company, Wheatland, N. Y., has been incorporated with a capital stock of \$500,000 to manufacture plaster board, etc. DeLancey Cameron, Genesee, N. Y.; H. F. Remington and H. R. Howard, Rochester, are the incorporators.

The Endicott Light, Heat & Power Company, Endicott, N. Y., will at once begin the construction of a lighting plant for the purpose of supplying the village with a lighting system, for which it has been granted a 50-year franchise by the Village Trustees.

The Buffalo Gasoline Motor Company, Niagara street, Auburn avenue and New York Central Railroad belt line, Buffalo, N. Y., has increased its capital stock from \$100,000 to \$200,000. A portion of the increase will be used for improving the equipment of the plant.

The F. F. Dalley Company, Buffalo, manufacturer of polishes, will erect a brick and concrete addition, 70 x 200 ft., three stories and basement, to its plant at Military road and the Erie Railroad, to cost about \$50,000. An equipment of automatically stirred steam-heating kettles will be required.

The Interurban Electric Light & Power Company, Buffalo, recently incorporated and holding franchises for the towns of Kenmore and Tonawanda, will build its power plant in Kenmore with alternating-current dynamo equipment, operated by gas engine and producer-gas plant. Alexander G. Hoefler, 296 Connecticut avenue, is manager.

The new plant of the Buffalo Corrugated Paper Box Company, Buffalo, to be built at Imson street and the Lehigh Valley Railroad, will be 119 x 119 ft., two stories, of brick and structural steel.

The Western New York Water Company, Buffalo, contemplates the construction of a power dam and power house at Burt, N. Y., at a cost of \$250,000. William B. Cutter, 614 Ellicott Square Building, Buffalo, is president of the company.

The Liberty Refining Company, Jamestown, N. Y., has been incorporated with a capital stock of \$25,000 by C. G. and A. B. Wooley and A. W. Kettle, Jamestown, to produce, refine and deal in petroleum and its products. A plant will be built.

New England

BOSTON, MASS., February 27, 1912.

Business in machine tools has not improved, nor has it fallen off. The average remains unchanged, with some houses reporting some improvement while others have had a less favorable experience. The common belief is that the year will be a better one than 1911, but will see no very radical betterment. The threat of a coal famine is removed, large quantities having been received at the various coal ports.

The Baush Machine Tool Company, Springfield, Mass., manufacturer of drilling machines, has effected its formal reorganization with the election of C. K. Lassiter as president, F. E. Bocorselski, vice-president; Walter H. Foster, treasurer; J. A. Eden, Jr., general manager, and C. A. Smith, superintendent. Mr. Bocorselski was formerly superintendent of the works and was active in the designing department.

The business of Frank C. Rawson, Worcester, Mass., manufacturer of handles for edge tools, will be moved to Keene, N. H.

The J. G. Blount Company, Everett, Mass., manufacturer of machine tools, is planning to extend its manufacturing facilities this season.

The 15 plants of the Hardware & Woodware Mfg. Company, New York, were sold at Worcester, Mass., February 21, to R. B. Fentress, Baltimore, representing a syndicate, the price being \$410,000. The accounts and bills receivable were sold to R. B. Cooley, New York, for \$80,000. The sale was by auction by order of the United States Circuit Court. The company has been in the hands of receivers about three years.

It is announced that the South Norwalk Engineering Company, South Norwalk, Conn., has made a long-term contract to manufacture the product of the J. L. Pilling Company, Athol, Mass., manufacturer of air and electric turntable tractors and hoists and other machinery for railroad, shipbuilding and mining work.

The Fore River Ship Building Company, Quincy, Mass., has begun the erection of two new buildings. One will be devoted to the shipwrights' and rigging departments and will be 30 x 60 ft., two stories. The other building will be 60 x 160 ft., three stories, and will be occupied for a mold loft, sawmill, tool shop and offices for department heads. Both will be fireproof, of steel with sheet-iron covering. The company has just taken a contract for a tank steamer for the Standard Oil Company, to cost \$700,000, and has a large amount of other work on the stocks in addition to the battleship for Argentina and the American battleship, the contract for which was recently taken.

It is finally settled that the Boston & Eastern Electric Railroad will build a tunnel under Boston harbor from East Boston to Central street, and thence on to a passenger terminal at Water street between Kilby and Congress streets. The project is an ambitious one, but it is necessary in order that the new line may enter the city.

Winslow H. Robinson, Worcester, Mass., manufacturer of sheet-metal goods, has purchased a tract of land on Prescott street adjacent to his factory, and proposes to erect a new building this season.

At a meeting of the Universal Machine Screw Company, Hartford, Conn., Charles Phelps was elected president, F. G. Smith was re-elected secretary and treasurer, and the following board of directors was chosen: Charles Phelps, George A. Sykes, Thomas W. Russell, Charles E. Bond, F. G. Smith, A. H. Pease, F. L. Wilcox and Charles L. Taylor. George B. Pickup, prominently connected with the mechanical department of P. & F. Corbin, New Britain, Conn., was made superintendent. R. Hakewessell and C. M. Spencer retire from the business.

Philadelphia

PHILADELPHIA, PA., February 27, 1912.

Some few merchants as well as manufacturers report a slightly better run of orders, but sales have been principally in single tools. Inquiries continue light. A good share of the current business involves the transfer of second-hand machinery. With prices on an unsatisfactory basis, merchants contend that there is practically no margin in these transactions, particularly when the demand for second-hand equipment, except it be of strictly modern type, is practically nil. A trifle better buying on the part of the railroads is noted, although very little comes from local roads. Manufacturers and merchants have received orders against recent inquiries from the Delaware, Lackawanna & Western and the Delaware & Hudson railroads and from the Lehigh Coal & Navigation Company, but little new business has developed. Some

small tools have been purchased by the local shipyards, which are actively engaged.

Here and there manufacturers of machine tools are somewhat better engaged; in instances special tool makers are operating at full force, but on the average makers of the general line of machine tool equipment are still operating considerably below normal.

Announcement is made that the Pennsylvania Electric Equipment Company has changed its corporate title to that of Cates & Shepard. There has been no change in the management of the business, which continues that of lighting and power equipment and installations.

Luria Brothers & Co., Reading, Pa., have purchased the plant of the Harrisburg Rolling Mill Company, Harrisburg, Pa., and are arranging to dismantle it. The equipment will be sold as second-hand machinery.

The General Processing Company is planning a 45 x 75-ft., three-story addition to its plant at Allegheny avenue and Amber street. A quantity of special apparatus and equipment will be needed, but the company is not yet prepared to consider this feature.

C. H. A. Dissenger Bros. & Co., Inc., Lancaster, Pa., manufacturers of gasoline engines, have been adjudged involuntary bankrupts in the United States District Court.

Local contractors are estimating on tunnel and foundation work in connection with the new power house to be erected by the Lehigh Navigation Electric Company, Hauto, Pa. The architect and engineer, L. B. Stillwell, 100 Broadway, N. Y., is taking bids and will shortly place contracts, it is stated, for the necessary equipment.

The Baldwin Locomotive Works has taken orders for 40 large Mikado-type locomotives for the Chicago, Rock Island & Pacific Railroad, as well as nine of the Pacific type for the Southern Railway. A very fair number of orders for single engines for industrial concerns have also been received. While its plant is still being operated on a very restricted basis, one of the officials of the company states that the outlook is more favorable.

A number of contractors are figuring on coal bunkers, ash pockets and conveyors for the power plant of the Girard Estate, Twentieth street and Oregon avenue.

The Penn Planing Company, Reading, Pa., is arranging to erect a new plant to replace that destroyed by fire early in November. The proposed plant will be 90 x 200 ft., of brick, steel and concrete, and will be equipped with new and modern machinery and power equipment. The purchase of the necessary equipment has not yet been taken up.

It is currently stated that the Pennsylvania Railroad is considering the establishment of a repair shop at Chester, Pa., to take care of requirements in that immediate vicinity. No definite information regarding the project is available.

The building of a subway in Broad street, with elevated spurs to different districts in the northern section of the city, is again the subject of consideration by city officials. The Philadelphia & Suburban Elevated Railway Company, which obtained a charter under the State laws to carry on that work, but which never obtained a city franchise, has again prepared an ordinance, which has been submitted to the city authorities. The estimated cost of the work is about \$20,000,000.

Chicago

CHICAGO, ILL., February 27, 1912.

The movement of machinery in this market has apparently been distributed somewhat unevenly through the various selling channels. In some quarters a decided and discouraging lack of business is reported. Elsewhere a number of live inquiries are noted aggregating in value about \$15,000. This business includes requirements for an 84-in. and a 60-in. boring mill, two radial drills, heavy upright drill, pulley lathe, standard lathe and several other tools of similar description. A Western road having a local terminal is inquiring for tools amounting to \$1,100, and the several other railroads previously mentioned are providing for the purchase of new machinery are still prospective buyers. The demand for power machinery and boilers has been fairly active in conjunction with the building of numerous office and power city buildings as well as small factories.

The Illinois Architectural Iron Works, Chicago, has been organized with a capital stock of \$50,000 to fabricate structural steel by Thomas J. Beden, John W. Yeager and Roy C. Merrick.

The Scandia Automatic Pump Company, Chicago, with an authorized capital stock of \$100,000, has been

licensed to incorporate for the manufacture of machinery, the petitioners being J. Arthur Johnson, Marie Hahn, Alex. Smietanka.

W. N. Rumely has taken out a building permit providing for the erection of a two-story brick factory at 1908 South Western avenue, Chicago.

The American Packless Valve & Mfg. Company, Chicago, has been organized to manufacture and deal in steam specialties and brass goods with a capital stock of \$100,000, by L. J. Kadeski, Michael F. Griton and Joseph J. Thompson.

Factory Products Company, Chicago, with a capital stock of \$20,000, has been incorporated to do a general manufacturing business by K. Franklin Peterson, Harold T. Peterson and Hubert E. Page.

The Berwind Coal Company, Chicago, has purchased a site at West Duluth, Minn., containing 47½ acres, upon which a coal dock will be built having storage capacity of 1,000,000 tons and with an estimated cost of about \$2,000,000.

The McClernen Metal Products Company, Chicago, with an authorized capital stock of \$50,000, has been organized by Louis F. McClernen, James McClernen and William S. Carson to handle metal goods.

The East Side Foundry Company, Chicago, has petitioned for a charter to operate a foundry and machine shop. The incorporators are Herman Mendel, Isabel O. Mendel, Patrick D. Mallot, and the authorized capital stock is \$25,000.

The Wire Products Company, Rockford, Ill., with a capital stock of \$25,000, has been organized to manufacture wire goods. The incorporators are E. C. Tracer, V. B. Nelson and F. G. Hogland.

The Illinois Sheet Metal Company, Milford, Ill., has been organized with a capital stock of \$50,000 to conduct a general manufacturing and sales business in sheet metal and building materials. The incorporators are J. A. Muriett, G. F. Patterson and T. C. Herron.

The Rock Island Bridge & Iron Works, Rock Island, Ill., has petitioned for a charter to engage in the fabrication and erection of structural iron work. The authorized capital stock is \$30,000, and the incorporators are M. H. Kanary, Edward Manhard and Walter G. Murphy. A new factory building will be erected.

The Nehring Insulated Wire & Mfg. Company, Sycamore, Ill., has been incorporated with a capital stock of \$30,000 to manufacture and deal in insulated wire and electrical appliances. The incorporators are Paul A. Nehring, James W. Cliffe, Thomas M. Cliffe and Louis E. Peck.

The International Smelting and Refining Company has purchased a site at East Chicago, upon which the company plans to erect manufacturing buildings to cost in the neighborhood of \$500,000.

The Chicago & Northwestern Railway and the Chicago, Minneapolis, St. Paul & Omaha Railway are issuing equipment notes and bonds to the amount of \$15,000,000, a portion of the proceeds of which will be devoted to the purchase of machinery.

The H. J. Frank Foundry Company, Davenport, Iowa, was recently seriously damaged by fire. A large amount of equipment was destroyed.

The Western Implement & Motor Company, Davenport, Iowa, is seeking a site suitable for the building of a plant near that city.

The Dart Mfg. Company, Waterloo, Iowa, has increased its capital stock to \$600,000, and is maturing plans for the locating of an Eastern branch.

The National Wood Works Company, Sioux City, Iowa, whose plant was burned last fall, has been reorganized and has undertaken the erection of a three-story brick factory building in that city. The officers of the reorganized company are H. Akerberg, president; R. J. Andrews, vice-president; J. A. McGoun, Jr., treasurer; E. Whalstrom, secretary.

Contracts have been let for the erection of a factory at Milwaukee, Wis., for the Weyenberg Shoe Company. It is the expectation that the building will cost \$50,000.

R. Mesmer & Bros., Majestic Building, Milwaukee, are letting the contracts for the erection of a three-story brick addition to the plant of the Kling Mfg. Company in that city.

The J. C. Iverson Company, Milwaukee, has let the contract for the erection of a one-story brick factory, 80 x 120 ft.

The Milwaukee Lithographing Company, Milwaukee, will build, of reinforced concrete, a three-story factory, 130 x 310 ft., and a two-story power house, 50 x 60 ft.

H. C. Hengels, 702 Grand avenue, Milwaukee, is receiving bids for a four-story factory building and power house for the American Malted Milk Company, Waukesha, Wis.

Cincinnati

CINCINNATI, OHIO, February 27, 1912.

The local machine-tool builders generally feel a trifle more encouraged over the situation. The inquiry shows some improvement. March is generally a good business month, both with the domestic and export trade, and it is expected to make a fairly good showing this year. The tariff question, which has been previously alluded to, continues to be one of intense interest to the machine-tool firms in this section, all of whom hope for a speedy adjustment of the vexing problem.

The jobbing foundries are more active, but several of them have had considerable trouble in getting a supply of coke, due to the congestion with nearly all the railroads in the Central West. Second-hand machinery is only moving fairly well.

The regular annual meeting of the Cincinnati Branch, National Metal Trades Association, will be held at the Business Men's Club on the evening of March 7. After the election of officers a banquet will be served, at which the following speakers will make addresses: F. C. Caldwell, president of the H. W. Caldwell & Son Company, Chicago, and also president of the National Metal Trades Association; H. D. Sharp of the Brown & Sharp Mfg. Company, Providence, R. I., and vice-president of the association, and Edwin E. Bartlett, E. E. Bartlett & Co., Boston. A large number of outside manufacturers are expected to attend the meeting.

A foreign trade bureau is to be established by the Cincinnati Business Men's Club. The idea originated with Civic Secretary J. M. Mamley, and it is proposed to keep on file in this department up-to-date information relative to shipping, banking facilities, tariffs of foreign countries, etc. The new bureau will also do everything possible to aid Cincinnati manufacturers to develop new fields, as well as to extend their trade in foreign territory where they are now doing business.

No definite arrangements have yet been completed for operating the Licking Rolling Mill in Covington, Ky., that was recently purchased at a receiver's sale by Hilb & Bauer, Cincinnati scrap-iron merchants. However, it is understood that if the sale is confirmed by the courts, the purchasers will make arrangements at once for starting up the plant, which has been idle for some time.

The Conover-Overkamp Machine & Tool Company, Dayton, Ohio, has been incorporated with \$65,000 capital stock to operate a machine shop and foundry. F. H. Conover and C. H. Overkamp are named among the principal incorporators.

The Cincinnati Foundry Foremen's Association, of which H. M. Ramp is president, held a meeting at the Ohio Mechanics' Institute on the evening of February 24. The next meeting will be held at the Grand Hotel in March, on a date not yet selected, at which H. M. Lane of Cleveland will deliver an illustrated lecture on general foundry practice.

The Tygaris Valley Brick Company, Bellington, W. Va., to manufacture brick, tile, etc., has been incorporated with \$50,000 capital stock. J. E. Keyser and C. H. Jones are named among the incorporators.

The Russell Water Softener Company, Dayton, Ohio, has been incorporated with \$40,000 capital stock to manufacture water softeners and purifiers. H. Russell and T. E. Tucker are named among the incorporators.

The Norwalk Iron & Brass Foundry Company, Norwalk, Ohio, has changed its name to the Norwalk Foundry Company. The company recently increased its capital stock from \$10,000 to \$25,000, and it is rumored that some extensive improvements are contemplated.

The West Virginia Power Company, Charleston, W. Va., has been incorporated with \$5,000,000 capital stock to erect a hydroelectric plant in Summers County, W. Va. No details of the company's plans have been given out, but further information can probably be obtained from Fred. Auld of Charleston.

N. C. Ridgeway, mayor of Falmouth, Ky., will open bids March 11 for furnishing and installing one 35 or 50-kva. generator and engine, together with boiler, switchboard and other necessary equipment for the outfit.

William J. Pugh and C. M. Knoche, Cincinnati, have leased quarters at 4657 Spring Grove avenue, to be used as a plastic relief factory.

The Thompson-Starrett Company, New York, con-

tractor for the proposed 27-story building to be erected for the Union Central Life Insurance Company at Fourth and Vine streets, has opened a Cincinnati office in the Burnett Hotel.

An ice factory will probably be erected in Cincinnati this spring by a company to be incorporated under the name of the Queen City Ice Delivery Company. It is understood that William Dorsey of Cincinnati has charge of the plans for the proposed company.

Indianapolis

INDIANAPOLIS, IND., February 27, 1912.

The Electro Light & Starter Company, Indianapolis, has been incorporated with \$500,000 capital stock to manufacture auto parts. The directors are F. H. Wheeler, J. E. Bell and C. C. Wedding.

The Indiana Scale & Supply Company, Indianapolis, has been incorporated with \$10,000 capital stock to manufacture scales and similar articles. The directors are A. M. Hall, F. M. Jones, Jr., and C. E. Averill.

The Sibley Machine Company, South Bend, Ind., has increased its capital stock \$12,000.

Reeves & Co., Columbus, Ind., manufacturers of threshing machinery, have begun the erection of a new two-story factory building, 58 x 160 ft., to be used in the manufacture of a gasoline-burning traction engine.

The Geyser Oil Tank Company, Ft. Wayne, Ind., has changed its name to the Geyser Company.

The Interstate Electric Company, Edinburg, Ind., has been incorporated with \$50,000 capital stock to supply light, heat and power. The directors are C. J. Huff, G. H. Hornecker and William McConnell.

The Roach-Brown Mfg. Company, Cumberland, Ind., whose plant was burned recently, will rebuild. The loss was \$18,000, partly covered by insurance. The company manufactures kitchen furniture. A. G. Brown is secretary-treasurer.

The Advance Stove Works, Evansville, Ind., has increased its capital stock from \$150,000 to \$225,000.

The Vincennes Furniture Mfg. Company, Vincennes, Ind., has increased its capital stock from \$25,000 to \$50,000 for the purpose of enlarging its plant.

The Warren C. Rude Mfg. Company, Crothersville, Ind., has been incorporated with \$30,000 capital stock to manufacture metal and wooden specialties. The directors are J. M. Rude, W. C. Rude and C. W. Keach.

The Beech Grove Improvement Club of Beech Grove, Ind., a suburb of Indianapolis, has closed a deal with the Shirley Radiator & Foundry Company to build its factory there. Its plant at Shirley, Ind., was destroyed by fire several weeks ago.

Cleveland

CLEVELAND, OHIO, February 27, 1912.

The improvement in the local machinery market noted a week ago has held up pretty well. Dealers report a fair volume of business in single tool orders and small lots of two and three tools. There is quite a little satisfactory volume of new inquiries, and the future outlook is regarded as quite encouraging.

The committee in charge of the annual meeting and banquet of the Cleveland Branch of the National Metal Trades Association has decided to make the meeting a noonday one instead of holding it at night, as formerly. The topic of discussion will be employees' liability and workmen's compensation. The branch expects to have an address by one of the local attorneys who has given the subject considerable study. The meeting will be held at the Chamber of Commerce Library, March 7.

At the regular meeting of the Cleveland Engineering Society, March 12, Eugene C. Pettibone, safety inspector of Pickands-Mather & Co., Cleveland, will read a paper on "Safety as Applied to Engineering."

Plans to combine the industries of the recently reorganized Reeves Mfg. Company, Canal Dover, Ohio, were brought out at the first annual meeting of the company held the past week. For the past year the company has been erecting a sheet-steel plant which will include six hot mills and a galvanizing plant. It was decided at the annual meeting to build another addition to the steel and forge plant, 100 x 420 ft.; to dismantle the old corrugating building and put the three works under one roof. At the annual election Herbert Greer was elected president; James Rees, vice-president; A. J. Krantz, secretary and treasurer. The officers and James Rees, J. E. Reeves, Charles F. Baker and Alexander Frazer compose the board of directors.

The Vulcan Iron Works Company, Toledo, Ohio, has been incorporated with a capital stock of \$10,000 by Fred H. Kirtley, S. Sanger, V. C. Southard, Trude Wooster and A. B. Cohn.

The Ohio Seamless Tube Company, Shelby, Ohio, has been authorized to increase its capital stock from \$432,000 to \$3,000,000. It is stated that the stock dividend of 300 per cent. will be issued to present stockholders.

The Progressive Association, Lima, Ohio, has under consideration a proposition from W. W. McIntyre of Detroit to build a \$100,000 plant in that city for the manufacture of automobiles.

The Krebs Commercial Car Company, Clyde, Ohio, has been incorporated with a capital stock of \$100,000 by B. A. Becker and others for the manufacture of motor trucks.

The Buckeye Clay & Coal Company, Mansfield, Ohio, will erect a new three-story building, 80 x 240 ft., at its works at New Salisbury, Columbiana County, Ohio.

The Conneaut Handle Company, Conneaut, Ohio, will build a new plant, one story, 60 x 100 ft.

W. D. Clark has been retained by the city of Toledo to look after the contemplated improvements of the water-works plant of that city. New machinery will be installed in the present plant and plans will be prepared for a high-pressure pumping station.

A special election will be held in Cambridge, Ohio, to vote on the issue of \$60,000 in bonds, to be used for building a sewage-disposal plant.

A new filtration plant will be erected by Sandusky, Ohio. O. O. Clark of that city has been retained as consulting engineer.

Plans for a sewage-disposal plant for Bellefontaine, Ohio, are being prepared by the Riggs & Sherman Company, Toledo, Ohio.

Detroit

DETROIT, MICH., February 27, 1912.

Business the past week has not been particularly good, although the aggregate of sales shows an improvement. One order for a round lot of metal-working tools is reported, together with a fair amount of single-tool business. Everything indicates that the manufacturers of automobiles will do a record-breaking business in 1912, and now that the show season is over and the season's orders are coming in, plans for the installation of additional equipment are maturing. As the automobile trade is of prime importance, locally, this means a great deal to the machine-tool interests of Detroit, and a decided improvement in conditions is confidently expected soon. There has been an improvement in inquiries noted both for new and second-hand tools.

The K-R-I-T Motor Car Company has completed plans whereby several new buildings will be added to the company's present plant, doubling its floor space and permitting an output four times as great as that of 1911.

The Michigan Carbon Company has awarded a contract to the Bryant-Detwiler Company for the erection of a power house at Delray, a Detroit suburb.

The Detroit City Gas Company has announced it will spend \$1,000,000 in improving its properties this summer. The company has already begun work on a duplication of both of its present gas works—one at the foot of Twenty-first street, the other at the foot of Meldrum avenue—and contracts for the equipment are now being let. The company's Delray plant also will be considerably enlarged and its capacity increased. In addition, about 75 miles of mains and pipes will be laid.

The United States McAdamite Metal Company, Brooklyn, N. Y., has purchased a large site at Isabella avenue and E street, Detroit, for a branch factory, and in addition to using two buildings, each 50 x 100 ft., now on the property, will erect a new foundry and manufacturing building, 90 x 150 ft. The company will manufacture automobile and motor-boat castings.

William B. Wrecks, formerly Detroit manager for the Westinghouse Electric & Mfg. Company, and John D. Noyes, formerly industrial expert for the same company, have formed a partnership and will open offices at 202 Scherer Building. The firm will make a specialty of equipping plants with electric drive.

The Ideal Electric Heater Company has been incorporated with \$5,000 capital stock to manufacture electric stoves and ovens. The stockholders are Emil Roos, William W. Wood and Edgar C. Fox.

The Briggs-Detroit Company, automobile manufacturer, whose incorporation was recently mentioned, has begun work on a new building, 100 x 250 ft., adjoining its present factory.

The Tivoli Brewing Company has issued \$200,000 in bonds, the proceeds of which will be used to increase the facilities of the company's plant and to provide for an addition to the bottling works.

The Carpenter Chemical Company has been incorporated with a capital stock of \$350,000, and will engage in the manufacture of drugs and toilet preparations. The principal stockholders are Herschel M. Payne and J. V. Payne.

Work has been started at Benton Harbor, Mich., on a large factory building for the Cray Machine Company of Chicago, which will remove its business to Benton Harbor about May 1.

Gardner, Peterman & Co., Onaway, Mich., will establish a stove and heading mill at Hillman, Mich.

The A. H. Horton Company has been organized at Lansing, Mich., with a capital stock of \$25,000. The new company will engage in the manufacture of electrical devices.

At a special election February 16 the taxpayers of Grand Haven, Mich., authorized a bond issue of \$60,000, the proceeds of which will be used for the purpose of extending and improving the water works system.

C. V. Taylor & Co., Pontiac, Mich., has been incorporated with \$25,000 capital stock to engage in the manufacture of automobile tops and wind shields. C. V. Taylor is the principal stockholder.

The Monroe Gas Light & Fuel Company, Monroe, Mich., is rebuilding and improving that part of its plant which was recently damaged by fire.

The Dudley Tool Company, Menominee, Mich., maker of tools, wrenches, etc., plans to double the size of its factory and add several new lines to its products. A small crucible steel plant will also be installed. W. J. Tideman is president.

The Michigan State Telephone Company will erect a new power house at Kalamazoo, Mich.

The Holland Gelatine Company, Holland, Mich., is preparing to erect a three-story addition to its plant.

Baldwin, Tuthill & Bolton, Grand Rapids, Mich., manufacturing machinists, are preparing to erect a foundry as an addition to their present plant.

The Monarch Paper Company, Kalamazoo, Mich., has under construction an addition to its plant to be used as a coating department. Ten paper-coating machines will be installed. The cost of the improvement is in excess of \$125,000.

The Industrial Works, Bay City, Mich., contemplates the erection of large additions to its plant, to include a machine shop and erecting room, 525 x 150 ft. A car shop, 300 x 150 ft., will also be erected and new equipment sufficient to double the capacity of the plant will be installed.

The South

LOUISVILLE, KY., February 27, 1912.

Business continues good in this market, and reports from other Southern districts indicate that the outlook is excellent. While the low prices at which much of the cotton crop was sold tended to retard trade in many lines, quotations are somewhat better now, and the feeling generally is more cheerful. Many new enterprises are being organized and the demand for machinery is being accordingly stimulated. Public service corporations are continuing to absorb a large amount of equipment.

The Kentucky Public Service Corporation, which recently took over several important Kentucky properties, will establish offices in the Keller Building, Louisville. The company plans a number of improvements of importance, and has already begun work at Bowling Green, having placed an order with the Henry Vogt Machine Company, Louisville, for a 300-hp. boiler for that plant. It is understood that a contract will also be let for a turbine for the Bowling Green plant.

The Kentucky Public Elevator Company, Louisville, has been purchasing equipment for the addition to its grain elevator which is now being completed. It has let a contract for a 335-hp. boiler to the Henry Vogt Machine Company, Louisville.

The Louisville Cereal Mill Company, of which L. C. Ewing is general manager, has let a contract for the erection of an addition to its grain elevator. The equipment will consist of cleaning and conveying machinery. Motors will probably be required.

L. R. Veatch, Louisville, who operates a shop for the rebuilding of milling machinery, is in the market for a used power drill and a used band saw of moderate size.

The Ox Breeches Mfg. Company, Louisville, has changed hands, and a number of improvements will be made in the plant. New machines will be installed, these requiring the purchase of additional motors. Charles New has been elected president of the company.

It is stated on good authority that the tobacco manufacturing plant of the R. A. Patterson Tobacco Company, Richmond, Va., is to be removed from that city

to Louisville on account of the advantage which will be secured from being closer to raw materials.

The joint improvement committee of the Lexington, Ky., Council has been authorized to purchase a rock-crushing outfit for use in preparing material for street repair work.

The Hopkinsville Water Company, Hopkinsville, Ky., is to enlarge the capacity of its plant. New high-pressure boilers will be installed and a 3,000,000-gal. pump will be purchased. The new equipment is to be purchased at once.

Frank O'Neil, Jr., Paris, Ky., has invented a machine for breaking hemp, the most difficult part of the work of preparing the commodity for the market. A company is to be organized for the purpose of manufacturing the machine, which is expected to result in a large increase in the hemp acreage of central Kentucky.

The Elkton Machine Works, Elkton, Ky., has been incorporated with \$6,000 capital stock by N. P. Blankenship, C. M. Cartwright and W. H. Oldham. It is to take over the machine shop of Mr. Blankenship, which is to be considerably improved and enlarged, and new tools will be purchased and installed. The company will do general machinery repairing.

The Alabama Coal & Coke Company, Birmingham, Ala., has purchased the mining properties of the Drury Coal Company at Waverly, Ky. The new owners will install new machinery, including power equipment, and increase the capacity of the mines considerably. Malin Hobson is president of the company.

The Consolidation Coal Company, Baltimore, Md., which is building several industrial towns in eastern Kentucky, is installing a water-works plant at Jenkins. The Little Elkhorn Creek is being dammed and the company will shortly purchase the necessary machinery and pipe for putting the system into use.

Oscar Palmer, Mt. Sterling, Ky., is organizing a company for the manufacture of a patented grass-seed stripper for use in preparing blue grass seed for the market. The plant will be located at Preston or Morehead, Ky. John C. Mayo, Paintsville, Ky., is interested in the company.

The Yellow Poplar Lumber Company, Coal Grove, Ohio, plans to erect several large band mills on the Big Sandy River for the development of a large tract of poplar and oak timber.

S. W. Easley, Williamsburg, Ky., is in the market for a small ice plant.

The Newport Rolling Mill Company, Newport, Ky., has awarded a contract to the McClintic-Marshall Construction Company, Pittsburgh, for the erection of a boiler house and an extension of its mill building. New power equipment will be installed.

It is reported that the George M. Helm Company, a branch of the American Snuff Company, is considering erecting a plant at Hopkinsville, Ky. Norman Mellon is Hopkinsville manager of the company.

The Farmers' Union Mercantile Company, McEwen, Tenn., will erect a small flour mill. Dixie Wright is secretary of the company.

The Enterprise Foundry & Machine Works, Bristol, Tenn., is in the market for some used machine-shop equipment, including a bulldozer and a car-wheel boring machine.

W. S. Milne, Cleveland, Tenn., is preparing to erect a chair factory in Chattanooga, Tenn. The estimated cost of the factory is \$100,000. The plant will be operated with power from a hydroelectric plant near Chattanooga.

The Bluegrass Phosphate Company, which has its principal offices in Cincinnati, Ohio, is developing a 500-acre phosphate tract near Mt. Pleasant, Tenn. A plant with a daily capacity of 50 tons will be installed. G. W. Killebrew, Mt. Pleasant, is president of the company.

J. E. Morelock, Chattanooga Iron & Wire Works, Chattanooga, Tenn., is contemplating the establishment of a plant for the manufacture of wire novelties, and is in the market for automatic machinery for electric welding to be used in work of that kind.

The Consolidated Lumber Company, Indianapolis, Ind., will erect a \$40,000 planing mill at Georgetown, Miss. Thomas R. Lewis is president of the company.

J. H. Gastona, Moss Point, Miss., is asking for quotations on a 75-hp. twin engine and three 80-hp. boilers.

P. G. Millen, Dade City, Fla., is buying machine tools for the equipment of an automobile repair shop.

Brewer & Gore, Memphis, Tenn., have purchased the water and electric light plants of Imboden, Ark., and will install power equipment and make other improvements.

The Gulf & Ship Island Railroad Company is erecting a 100-ton coal tippie at Gulfport, Miss. The Fair-

banks-Morse Company has been given the contract for the erection of the plant and the installation of the machinery.

The Southern Power Company, Charlotte, N. C., has let a contract for the equipment of a boiler room to the Erie City, Pa., Iron Works, and another to the Westinghouse Machinery & Mfg. Company for the stokers to be installed in a steam-generating plant.

The J. D. Bridges Company, Florence, S. C., is equipping a machine shop for the manufacture of automobile parts. H. D. Bridges is president of the company, which recently incorporated with \$8,000 capital stock.

M. L. Wilson, Opeleika, Ala., is interested in the erection of a gas plant of moderate size.

The Georgia Chair Company, Flower Branch, Ga., is asking for quotations on a 125-hp. boiler.

The Bell Bros. Marble Company, Athens, Ga., is preparing to install additional machinery in its plant.

The Piedmont Portland Cement Company, Portland, Ga., has decided to issue \$250,000 of bonds for the purpose of increasing the output of the plant to 1500 barrels a day. New machinery for the purpose will be installed about May 1. J. C. Bass is president.

Osceola, Ark., will open bids March 10 for machinery for its electric light plant, including boilers, generators, switchboard, etc. W. J. Lamb is chairman of the board of improvement.

The Ashland Coke & By-Product Company, Covington, Ky., has been incorporated with \$10,000 capital stock by William G. Eaton, Frank R. Rhodes and James C. Layne, Jr.

The New South Oil & Gas Combine Company, Salyersville, Ky., has been incorporated with \$75,000 capital stock by A. H. Adams, F. C. Lacy and E. W. Pendleton.

Zeb Ward, Little Rock, Ark., has been awarded a contract to construct a water and electric light plant for the city of Lexington, Tenn. The contract price is \$48,500. The contract provides for the installation of equipment, including boilers, pumps, engines, generators, etc.

The Sherman-Lucas-Smith Company, Chattanooga, Tenn., has been incorporated with \$100,000 capital stock by Morris Sherman, James Lucas, Thomas L. Smith and others for the manufacture of transmission machinery.

The plant of the Stricklin Pattern Works, Chattanooga, Tenn., which was recently burned, is to be rebuilt.

Plans have been drawn for the erection of a new plant by the Eureka Foundry Company, Chattanooga, Tenn., to replace that which was burned. It is stated that \$30,000 will be invested.

Pulaski, Tenn., is to rebuild its electric light plant, which was recently burned. Two engines and two generators will be included in the equipment. C. L. Wheeler is superintendent of the plant.

The Polytechnic Shop, 289 Poplar street, Memphis, Tenn., is equipping a brass shop. Welding and other apparatus will be installed.

J. A. Denton, Johnson City, Tenn., is in the market for an elevator.

It is reported that Asheville, N. C., interests plan the erection of a large hydroelectric plant, capable of generating 18,000 h.p., on French Broad River, near Newport, Tenn. Surveys are being made and options on sites secured.

J. C. Durdin & Son, Camden, Tenn., are now purchasing equipment for an electric light plant. Orville Travis will be superintendent of the plant.

S. M. Lyons and others are planning the establishment of a plant at Pulaski, Va., for the manufacture of metal beds.

The Gadsden Car Works, Gadsden, Ala., will improve its plant at an estimated expense of \$20,000. An electric light plant is to be installed.

The Talladega Foundry & Machine Company, Talladega, Ala., has purchased a new site and will remove its shops to that location. A shop will be equipped for the manufacture of soil pipe, and foundry work will be arranged so as to include the manufacture of small steel castings.

John F. O'Neill, New Orleans, La., has been made manager of the Southern branch office of the L. & I. J. White Company, Buffalo, N. Y., manufacturer of planing machine knives and other tools used in wood-working plants, and will also represent the James Ohlen & Sons Mfg. Company, Columbus, Ohio, which manufactures a full line of saws.

St. Louis

St. Louis, Mo., February 26, 1912.

There is practically no change in the tone of business from recent reports. Single tools continue to run into a fairly good total, and second-hand tools are showing some evidence of life, though this could scarcely be called activity. Dealers are not pessimistic, but have developed a feeling that about all they can do is take things as they come, with hope that the future will bring something worth while.

The National Light & Power Company, St. Louis, is negotiating with the cities of Fort Smith, Ark., and Muskogee, Okla., to supply them with electric light and power from a hydroelectric plant which it is preparing to build at the junction of the Illinois, Grand and Arkansas rivers in Oklahoma. Work on the construction of the plant is to begin within 60 days. The plant will develop 5000 hp. and the company is to operate under a Federal charter. Transmission lines are to supply all surrounding territory and the company will spend about \$1,250,000 on the plant and accessories. The company, which is headed by Judson H. Boughton as president, is in the market now for necessary machinery and transmission supplies.

The Ozark Power & Water Company has let the contract for the construction of a 15,000-hp. hydroelectric plant on the White River, 43 miles below Springfield, Mo. The plant is planned to supply Springfield, Joplin and the entire mining district of southwest Missouri with light and power and will be completed by April 1, 1913. The company, which has a capital stock of \$3,000,000, has a Federal grant and has let the dam contract to the Ambursen Hydraulic Construction Company, Boston; the electrical machinery contract to the General Electric Company and the hydraulic machinery contract to S. Morgan Smith, New York. The current is to be carried by steel-tower transmission lines 123 miles, and the contracts already let involve about \$1,500,000 of the total investment.

Willer & Johnson, Princeton, Ill., have incorporated with \$10,000 capital stock to engage in the manufacture of plumbers' and steam fitters' supplies. R. N. Willer and C. A. and John Johnson are the incorporators.

The Farmers' Elevator Company, Sandwich, Ill., has been incorporated with \$100,000 capital stock for the purpose of constructing and operating a grain elevator.

The Attica Bridge Company, Attica, Ind., has begun the construction of its new plant at East St. Louis, Ill., to which it will remove as soon as the buildings are completed.

The General Chemicals Company is erecting a plant at East St. Louis, which will be equipped with modern machinery. The buildings are one of eight stories, 75 x 150 ft., and one of three stories, 150 x 200 ft.

The Granby Mills Company has begun the construction of a large milling plant at East St. Louis which will require considerable mechanical equipment.

The Home Ice & Fuel Co., Streator, Ill., has increased its capital from \$5,000 to \$50,000 for the purpose of increasing its business and enlarging its artificial ice plant.

The Knauer & Siler Rock Company, Gallatin, Mo., has been incorporated with \$10,000 capital stock by Charles and H. L. Knauer and A. F. Siler, and is in the market for quarry machinery.

The Stanard-Tilton Milling Company, St. Louis, has acquired a site 100 x 124 ft. for the construction of an extension of its milling capacity.

The National Chair Company, St. Louis, controlled by Joseph Yawitz and E. V. Glaser, has leased a building of 60,000 sq. ft. of space, which it will equip as a factory to increase its present output.

The St. Joseph Box Company, St. Joseph, Mo., has been incorporated with \$25,000 capital stock by S. H. and C. H. Goodyear and R. T. Forbes, and will equip a box manufacturing plant at once.

The Louis McMurray Packing Company, Pontiac, Ill., has been organized with \$40,000 capital stock by Frank Goods, Ignatius Goods and E. A. Simmons, and will equip a packing plant at once.

J. W. Lough & Co., Scott City, Kan., with Marks & Son, Chicago, have completed arrangements for the construction of a \$100,000 hydroelectric plant at Scott City, the power to come from the water pressure of artesian wells. The construction work will begin at once. The water, after its use for power, will be pumped for irrigation purposes also. The syndicate has a 20-year franchise in Scott City for the supply of electric light and power.

The J. E. Bulls Corrugated Paper & Box Company, St. Louis, Mo., is planning to rebuild its plant recently destroyed by fire and will soon be in the market for paper box machinery to be operated by motors.

The municipality of Afton, Okla., will receive bids March 4 for furnishing, delivering and erecting one combined high speed engine and 60 cycle, three phase electric generator having a capacity of 100 kw., one return tubular boiler and one A. C., motor driven, centrifugal, single stage pump. Goodwin & Harper, 920 Scarritt Building, Kansas City, Mo., are the engineers in charge.

The Hickson-Rogers Mfg. Company, Paragould, Ark., has been incorporated to take over the businesses of the Rogers-Meiser Mfg. Company and Hickson Bros. The company will occupy the plant formerly used by the Hickson Bros. and will make additions to building and machinery equipment. The company manufactures spokes and wagon parts.

Texas

AUSTIN, TEXAS, February 24, 1912.

The establishment of new industrial enterprises continues to call for the installation of large amounts of machinery in Texas and the Southwest. Irrigation development is the source of a very large demand for pumping plants. The planting season is now on in south and central Texas, and prospects are favorable for an exceptionally good crop year.

The Kingsville Power Company, Kingsville, will construct an extensive system of electric-power transmission lines through the adjacent irrigated territory for the purpose of operating pumping plants upon a number of wells. This work will mark the inauguration of a new method of bringing water supply for irrigation purposes to the surface in that section, and it is expected that other central electric-power plants will be installed for similar purposes in different localities that are undergoing agricultural development. A. L. Kleberg is manager of the company.

The Louisiana Land & Irrigation Company, Pharr, will install a large irrigation pumping plant upon its property near Pharr. The water supply will be obtained from the Rio Grande.

The Medina Townsite Company, San Antonio, has been formed with a capital stock of \$25,000. It will establish four towns upon the 60,000-acre tract of land near that city that is to be irrigated by the Medina Irrigation Company. It will also erect a number of industrial plants and install public utilities of different kinds. The incorporators are C. C. Cresson, T. B. Palfrey, Franz C. Groos, C. H. Kearny and William Aubrey.

A new compressor and condenser are being installed at the Mesa pumping station of the municipal water-works system of El Paso, at a cost of \$21,215. A new pump is also being installed at the wells.

H. B. Pitts of Marshall, will erect a flour mill and grain elevator at Longview.

The Jacksonville Ice & Electric Company is installing additional machinery and making other improvements to its electric light and power plant at Jacksonville.

The Little Giant Stove & Novelty Company has been formed at Ft. Wayne with a capital stock of \$40,000 for the purpose of manufacturing stoves. The officers of the company are J. H. Greer, president; B. W. Campbell, vice-president; G. H. Colvin, treasurer; D. W. Maddox, secretary and manager, and Lewis Alverson, assistant manager.

The Greenville Bottling Works is installing an ice plant at Greenville, at a cost of \$10,000.

The City Commission of Waco has under consideration the proposition of submitting to the taxpayers the question of issuing \$400,000 of bonds for installing a new pumping plant and filtration system and extensions of the mains of the municipal water-works system. The water commissioner has made a favorable recommendation on the proposition.

W. A. Fitch is preparing to impound the water of what is known as Tule Lake for the purpose of supplying Corpus Christi with its water supply and to irrigate about 3000 acres of land. The cost of the dam and other works involved in the project will be \$151,000.

The Coleman Vitriified Brick Company is installing a large brickmaking plant at Coleman.

The Bryan Power Company will install a new 250-hp. Diesel engine and make other improvements to its plant at Bryan.

Peters, Zebro & Zeech of Waco, who recently purchased the planing mill of E. L. Murrell at Temple, will install considerable new machinery and enlarge the plant in other ways.

The American Rio Grande Land & Irrigation Company will install two additional large pumps at its irrigation pumping station on the Rio Grande near Mercedes. The company will spend \$100,000 in improvements.

The Tiffin Crushed Stone Company will install considerable new machinery in its plant at Ranger. It is to be made one of the largest plants of its kind in the State.

J. W. Griffin and associates are promoting the establishment of a large broom-manufacturing plant at Brady.

E. E. Wright of Chicago and N. J. Badu of Llano and others are arranging to develop on a large scale an extensive deposit of asbestos situated on Crabapple Creek, about 20 miles from Llano.

H. E. Atterberry and associates will establish a factory at Victoria for the manufacture of stoves.

The Llano Gold & Rare Metals Company will install additional machinery and double the capacity of their ore-reduction mill near Llano. The plant at present has a capacity of 50 tons of ore per day.

The Melvine Land & Irrigation Company has been formed at San Antonio, for the purpose of constructing a system of irrigation near Hebbbronville. It will reclaim about 3600 acres of land.

The Amarillo Lumber Company has been formed at Amarillo, Texas, with a capital stock of \$40,000. The incorporators are H. W. Galbraith, L. B. Newby and J. C. Galbraith.

N. J. Badu of Llano and associates are preparing to construct a dam across the Colorado River, and install a hydroelectric plant near Llano for the purpose of providing electrical energy for smelting iron ore in furnaces which they propose to erect.

The White Oaks Cat Mining & Leasing Company is installing a large electric-power plant at its mining property near White Oaks, N. M.

The proposition of issuing \$25,000 of bonds for the construction of a complete sewer system at Artesia, N. M., will be submitted to a vote of the taxpayers within the next few weeks.

Eastern Canada

TORONTO, ONT., February 24, 1912.

Manufacturers who have been some years in the business of making machinery and equipment in this province comment upon the rapidly changing scale of the demand as well as upon the growing imperativeness of it. In the last few years it has increased many fold, and the magnitude of the plant to be provided is as a rule very much larger than that called for in the average orders of six or seven years ago. Also, whereas business then had to be more or less pushed, the pushing is now the other way. The equipment upon which manufacturing plants are now engaged is a very large total. As soon as the snow and frost leave the ground the rush of expansion and development will begin. Canada will keep a great amount of plant employed at high pressure throughout the coming summer and autumn. And a very considerable percentage of the plant that will be thus at work is now in the making. Competition from outside gets keener, but Canadian shops are getting plenty of work. Profits are not always as good as they were, but, as material is cheaper, reductions in the price of the finished product do not all come out of profits.

Engineering & Development, Ltd., is the name of a company that has received letters patent of incorporation from the Dominion Government to carry on a great variety of businesses in the way of construction and manufacture. Its capital stock is \$100,000 and its head office Montreal.

Canadian Maw Brakes, Ltd., has been incorporated with a capital stock of \$500,000, its chief place of business to be in Montreal. Among the things it is authorized to do is the manufacture of car starting and stopping devices and to engage in iron and steel making.

The Maritime Nail Company, Ltd., has been incorporated as a Dominion company with a capital stock of \$250,000, its chief place of business to be St. John, N. B.

The Canadian Steel Foundry, Welland, Ont., is arranging to build a blast furnace this year to produce 400 tons of pig iron per day.

The Standard Iron Company has received a Dominion charter of incorporation with a capital stock of \$100,000, its chief place of business to be in Montreal. Among other things it is authorized to manufacture pig iron.

Thomas A. Low, Renfrew, is preparing to erect a large flour mill and a grain elevator at Arnprior.

The Arnprior Box Company will soon have its factory completed for the making of wood fibre cheese boxes at Arnprior, Ont.

The Buffalo-Ontario Smelting & Refining Company proposes to erect a smelter in Kingston, Ont., at a cost of \$300,000.

The Partington Pulp & Paper Company, St. John, N. B., undertakes to expend \$100,000 on its property within two years and to increase its staff by 50 men in that time, and eventually to erect a paper mill to convert half its product into paper at a cost of \$500,000. The City Council agreed that the present assessment at \$225,000 should remain in force for 15 years, commencing Jan. 1, 1912.

The Northern Bolt & Screw Company, Ltd., has been incorporated at Owen Sound, Ont., to manufacture products indicated by its name. The provisional directors are Horace B. Smith, James Garvie and Francis H. Kilbourne.

The Federal Sign System Company, Chicago, Ill., will build a Canadian branch factory at Hamilton, Ont.

The Perfection Cooler Company, Ltd., Toronto, has been incorporated with a capital stock of \$50,000 by G. Wells, James J. May and Frank R. Smith to manufacture water coolers and metal and fiber wares.

The Peterborough Model Foundry & Mfg. Company, Peterborough, Ont., has been granted a charter by the Dominion Government with a capital stock of \$40,000 and is arranging for a manufacturing plant. The provisional directors are Thomas H. Ruble, John Condon and William H. Pethic.

The Differential Axle Company, Ltd., Toronto, Ont., has been incorporated with a capital stock of \$2,000,000 and will engage in the manufacture of railway equipment. Isadore F. Hellmuth, John R. Meredith and E. C. Cattanaclie are the provisional directors.

Western Canada

WINNIPEG, MAN., February 23, 1912.

The aggregate of permits issued in the leading cities of western Canada thus far in 1912 is larger than in the corresponding period of last year, and indicates that there will be a big amount of building in the spring. The volume of general business is increasing as the season advances, and it is apparent that the conditions throughout the country are more satisfactory than generally believed. The situation as regards the crop movement is being in some respects exaggerated in the effort to draw the attention of the authorities to the serious lack of adequate transportation facilities.

G. V. Hastings, general manager of the Lake of the Woods Milling Company, Ltd., Winnipeg, is in Montreal in consultation with the officials at the head office there in connection with additions to be made to the mill at Keewatin to increase its capacity.

The Taylor Milling & Elevator Company, Ltd., Nelson, B. C., will erect a grist mill and an elevator there in the spring.

The town of Weyburn, Sask., will add to its electric lighting plant, to bring the total capacity up to 1000 hp.

The Manitoba Bridge & Iron Works Company, Winnipeg, has decided to construct an entirely new plant, the present one being inadequate for the increasing business.

A. A. Guy has taken out a permit for the erection of a sash and door factory in Calgary, Alberta.

The Western Vancouver Lumber Company, Ltd., Victoria, B. C., has been incorporated with a capital stock of \$2,000,000 to manufacture and deal in lumber and timber. The incorporators are C. T. Dupont, G. H. Robertson and A. E. Robertson, all of Victoria.

The Ritchie-Shelton Lumber Company, Ltd., Vancouver, B. C., has been incorporated with a capital stock of \$20,000 to operate a lumber mill. A. M. Whiteside is the solicitor.

The Western Box & Shingle Mills, Ltd., Nelson, B. C., will open a factory shortly.

Thomas Hooper, 1105 Government street, Victoria, B. C., is preparing plans for a seven-story office and store building.

The Jensen Tanneries of North Dakota is negotiating with the Council of Moose Jaw, Sask., for a site on which to erect a \$15,000 plant.

Arbuthnot & Helmer, 644 Sixth avenue, Vancouver, B. C., are considering the erection of a sash and door factory.

The Western Canada Mfg. Company, Ltd., Winnipeg, has been incorporated with a capital stock of \$60,000 for the purpose of manufacturing metallic grain bins, granaries, etc.

G. B. Bury, vice-president of the Canadian Pacific Railway Company, says that one completely equipped unit of the new Coquitlam, B. C., terminal scheme is to be constructed by the railroad this spring and summer. The expenditure on that account will be \$600,000. The construction will include a roundhouse, 25 miles of track, car repair shops, machine shops, etc. Eventually there will be four or five such units and about 85 miles of terminal track at Coquitlam. Developments are being pushed on in view of the changes that will follow the opening of the Panama Canal.

A new company with \$300,000 capital stock is to take over the Schaeke Machine Works in New Westminster, B. C., and transfer them to a site in Coquitlam.

W. A. Douglas has been in conference with the Mayor of Port Arthur and officers of the Kaministiquia Power Company there for a site upon which to erect blast furnaces and open hearth furnaces. He is said to represent steel interests in the United States.

Plans for extension of the Regina, Sask., lighting plant have been submitted. They call for an expenditure of \$300,000 during the year. A new \$50,000 generator is being installed and another must be ordered at once to be in position by November, 1913, when it will be required. Two new fire halls are to be built and \$64,000 spent in new fire fighting apparatus in Regina this year. Motor wagons are to be introduced. It is proposed to erect a new power house with electrical pumps for the handling of the new high pressure system.

An agreement between President Backus, of the Ontario & Minnesota Power Company, and a municipal committee of Fort Frances, Ont., has been reached to settle certain controversies. The company is to build a 100-ton pulp mill and a 100-ton paper mill.

The Saskatoon Tent & Mattress Company is about to build a factory in Saskatoon, Sask. Machinery is being purchased in England.

Government Purchases

WASHINGTON, D. C., February 26, 1912.

The United States Engineering Office, Wilmington, Del., will open bids March 18 for furnishing propelling machinery and electric installation for repair of the United States inspection boat Gannet.

The Paymaster General, Navy Department, Washington, will open bids March 19, under schedule 4361, class 11, for one standard four-motor electric traveling crane; class 12, one No. 3 Newton new design bar cold saw cutting-off machine; class 13, one No. 2 Newton new design bar cold cutting-off machine; class 14, one steam hydraulic or pure hydraulic forging press.

The Bureau of Supplies and Accounts, Navy Department, Washington, opened bids February 20 for material and supplies for the navy yards as follows:

Schedule 4299, class 31, one motor driven vertical boring machine.—Bidder 93, Fairbanks Company, Washington, \$387; 96, J. A. Fay & Egan Company, Cincinnati, Ohio, \$257.98.

Class 32, one motor driven band and circular saw filing and setting machine.—Bidder 93, Fairbanks Company, Washington, \$137; 101, General Machinery & Supply Company, New York, \$150; 169, Manning, Maxwell & Moore, New York, \$126.

Class 33, one motor driven variety wood worker.—Bidder 93, Fairbanks Company, Washington, \$247; 96, J. A. Fay & Egan Company, Cincinnati, Ohio, \$475; 135, Kemp Machinery Company, Baltimore, Md., \$244; 169, Manning, Maxwell & Moore, New York, \$271.

Class 34, one motor driven surfacer.—Bidder 93, Fairbanks Company, Washington, \$397; 96, J. A. Fay & Egan Company, Cincinnati, Ohio, \$630.34; 169, Manning, Maxwell & Moore, New York, \$481.20; 187, Oliver Machinery Company, New York, \$460 and \$658; 237, H. B. Smith Machine Company, Smithville, N. J., \$541; 247, Towseley Mfg. Company, Cincinnati, Ohio, \$700 and \$745.

Class 35, one motor driven pattern makers' lathe.—Bidder 93, Fairbanks Company, Washington, \$447; 188, Orenstein-Arthur Koppel Company, Pittsburgh, Pa., \$450; 200, Prentiss Tool & Supply Company, New York, \$331.75 and \$334.75.

Class 36, one motor driven band saw.—Bidder 93, Fairbanks Company, Washington, \$407; 96, J. A. Fay & Egan Company, Cincinnati, Ohio, \$451.23 and \$309.26; 169, Manning, Maxwell & Moore, New York, \$370.40; 187, Oliver Machinery Company, New York, \$232; 237, H. B. Smith Machine Company, Smithville, N. J., \$275; 247, Towseley Mfg. Company, Cincinnati, Ohio, \$400 and \$470, alternate.

Class 37, one motor driven jointer.—Bidder 93, Fairbanks Company, Washington, \$297; 96, J. A. Fay & Egan Company, Cincinnati, Ohio, \$256.65; 169, Manning, Maxwell & Moore, New York, \$350; 187, Oliver Machinery Company, New York, \$290; 200, Prentiss Tool & Supply Company, New York, \$441; 237, H. B. Smith Machine Company, Smithville, N. J., \$300; 247, Towseley Mfg. Company, Cincinnati, Ohio, \$300 and \$330, alternate.

Class 38, one motor driven universal saw table.—Bidder 93, Fairbanks Company, Washington, \$297; 96, J. A. Fay & Egan Company, Cincinnati, Ohio, \$256.65; 169, Manning, Maxwell & Moore, New York, \$345.10; 187, Oliver Machinery Company, New York, \$395; 200, Prentiss Tool & Supply Company, New York, \$470 and \$491.

Class 41, one bench jointer.—Bidder 96, J. A. Fay & Egan Company, Cincinnati, Ohio, \$192.37; 169, Manning, Maxwell & Moore, New York, \$287; 87, Oliver Machinery Company, New York, \$159.

New Tools and Appliances

This is essentially a news department for which information is invited.

Switchboards for Small Plants.—With a view to keeping the initial investment low and providing good service in small isolated plants and central stations, the General Electric Company, Schenectady, N. Y., has developed and placed on the market a complete line of small switchboards ranging in capacity from 1 kw. at 125 volts to 225 kw. at 250 volts. The equipment provided for these switchboards is high grade, but the prices are comparatively low. Dull black marine finished slate is employed for the panels which are furnished with the necessary connections between the buses, the switches and the circuit breakers where the last are supplied together with the wiring on the back of the board. The instruments have a dull black finish and the current-carrying parts on the front of the panels are polished and lacquered. A complete supporting frame work and the necessary fittings are furnished with each panel, malleable iron supports being provided for the small ones, which are intended to be mounted on the wall, while pipe supports are furnished for the ones that are to be installed on the floor.

Motor Starting Rheostats.—The Electric Controller & Mfg. Company, Cleveland, Ohio, has recently placed on the market a new line of starting rheostats for series, shunt or compound wound direct-current motors. These rheostats are regularly furnished in sizes ranging from $\frac{1}{4}$ to 35 hp. for use on 110-volt circuits and from $\frac{1}{4}$ to 50 hp. for use on 220 and 550-volt circuits. In all sizes the contacts are removable from the front of the rheostat without disassembling or interfering in any way with the wiring or altering the resistance. The resistance wire, which is liberally proportioned, is wound on asbestos covered metallic tubes through which an air current flows. This air conducts the heat of the resistance away and at the same time does not touch the heated wire, with the result that unusual freedom from oxidation is secured. The retaining magnet employed with this rheostat is iron clad and is thus protected from mechanical injury.

Tube Grinding and Polishing Machine.—An automatic grinding and polishing machine for pipes, tubes and rods has been brought out by the Tube Bending & Polishing Machine Company, 1300 Bayard street, Baltimore, Md. This machine is intended for buffing and polishing brass and copper tubing and rods and also for grinding and polishing iron and steel pipes and brazed or welded tubing. These machines have a capacity for polishing and grinding stock ranging from $\frac{1}{4}$ to $2\frac{1}{4}$ in. external diameter, although if desired special machines for other sizes can be supplied. When polishing the buffs operate at a speed of 2500 r.p.m. and have an output of from 2000 to 3000 lin. ft. The output of the machine when operated as a grinder is from 1200 to 700 lin. ft. and the emery wheels run at 160 r.p.m. From 8 to 15 hp. is required to drive the machine, which weighs about 2200 lb. and occupies a space about 6 ft. square.

Adjustable Light Holder.—A recent development of the Ryede Specialty Works, Rochester, N. Y., is an adjustable light holder possessing universal adjustment and which can be readily attached to the ceiling, the wall or the floor. The bracket of the holder is made in eight sizes ranging in length from 2 to 6 ft. and the extension rod to which the lamp is fastened is made in the same lengths as the bracket. The clamp which grips the brass shell of the light socket and the support for the cord are both insulated from the bracket. Either polished, nickel-plated or oxidized finish can be furnished.

Adjustable Drawing Table.—A rigidly constructed drawing table having a wide range of vertical and horizontal adjustments has been brought out by the American Drafting Furniture Company, Rochester, N. Y. The frame of the table is composed of enamel finished castings, and $1\frac{1}{2}$ -in. pine is employed for the top, which is made in three sizes ranging from 37 x 48 to 48 x 72 in. The base of the table is either 42 or 48 in. wide.

Bearing Shim.—A shim for bearings composed of a series of layers of brass 0.002 in. thick and firmly held together by a film of solder is being manufactured by the Lindhe Shim Company, 210 Canal street, New York City.

Adjustments are made by lifting one end of one or more of the layers and peeling it off, the rest of the shim remaining solid. While this device is designed especially for all classes of machinery where split bearings are used, one of the fields where it finds special application is the marine engine.

Forged Flat Twisted Drill.—As the result of a number of experiments, Joseph T. Ryerson & Son, Sixteenth and Rockwell streets, Chicago, Ill., have brought out a new high speed forged drill. In general shape and cross section it is the same as the milled drills now in general use, but it possesses this advantage over its predecessor in that the continuity of the fibre is not destroyed by the milling operation and as a result a strong, clean-cutting tool has been produced. Efficiency and economy are claimed to have been secured by the use of these drills and in recent tests six $1\frac{1}{2}$ -in. drills bored 40,000 holes through material ranging in thickness from 1 to $2\frac{3}{4}$ in. without any appreciable damage to the cutting edges. In the speed tests one $\frac{1}{4}$ -in. drill bored three holes through a block of steel $8\frac{1}{4}$ in. thick and having a carbon content of 0.4 per cent. in 7, $6\frac{1}{2}$ and 7 min. respectively.

Multiple-Spindle Drill.—A recent product of the Pratt & Whitney Company, Hartford, Conn., is a multiple-spindle drill which was furnished with either square or rectangular head and with or without power feed. Both types of head are fitted with the full number of driving gears so that additional spindles can be employed even though the full number was not ordered in the first place. The working surfaces of the table are $23\frac{1}{2} \times 20\frac{1}{4}$ in. and $29\frac{1}{2} \times 18\frac{3}{4}$ in. for the square and the rectangular heads. The drilling capacity of the machine is 16 drills ranging from $1/16$ to $3/4$ in. in diameter in cast iron and the same number ranging from $1/16$ to $1/2$ in. in diameter in steel. When the full number of spindles are not in use, it is, of course, possible to use slightly larger drills. A special feature of the machine is a vertical table adjustment on the knee of $10\frac{1}{2}$ in. while the knee travel on the spindle is $18\frac{1}{2}$ in.

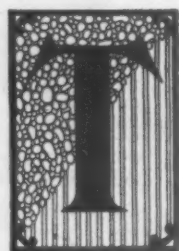
Swivel Chuck Jaw.—Griggs & Henderson, 212 Water street, Fitchburg, Mass., have developed a swivel chuck jaw for gripping tapered and irregular shaped castings. The chuck jaws accommodate themselves to any taper or parallel piece and wear on the slides, the scroll and the screws will not have any effect on the uniform contact of the jaw on the work.

Portable Electric Grinder.—The Hamilton-Beach Mfg. Company, Racine, Wis., has recently brought out an electric grinder made of aluminum, which when complete weighs 5 lb. The bearings are dust proof and an adjustable end thrust ball bearing takes up the wear. The $1/10$ -hp. driving motor operates on either direct or alternating current. The speed of the grinding wheel is 10,000 r. p. m. and the machine is adaptable for both external and internal grinding, since its design enables it to be attached readily to various machine tools.

Automatic Drill Chuck.—A quick-acting automatic chuck, in which the drill is gripped by three equally spaced cam-shaped jaws, has been developed by the Emrick Drill Chuck Company, 139 Stockholm street, Brooklyn, N. Y. These jaws are geared together through the knurled outer sleeve which controls them, and in action the grip of the jaws increases in proportion to the twisting stress of the drill. If it is desired to release the drill while the machine is in motion this can be done by holding the sleeve which turns the jaws simultaneously to their widest opening. Two sizes of chuck are made, one for taking all sizes of drills from 1 to $1/2$ in. and the other for holding drills ranging from $7/16$ to 1 in. One of the special features of the chuck is that the action of the jaws in closing tends to wipe any chips or dirt which may be on the drill shank or lodged in the working parts away from the contact point of the jaws and the drill shank.

Triple Lever Screwdriver.—H. D. Smith & Co., Plantsville, Conn., have developed a triple lever screwdriver. In this tool the handle is divided, and by using a bolt and thumb nut spotted on the inside of the joint the handles are held in any position, thus permitting a variety of leverages. Both portions of the handle can be adjusted to any desired angle up to 90 deg., and inaccessible screws are easily reached by adjusting the entire handle.

How to Use The Iron Age



THE IRON AGE is used perhaps for a greater number and variety of purposes than any other trade paper in the world.

¶ The object of this statement is to point out the features most important to the individual demands of your business and to indicate how to use its material and information to the best advantage.

¶ Doubtless the average IRON AGE reader knows the value of material devoted to management, mechanical advancement, new ideas in machinery and equipment and new methods for increasing the efficiency and economies of the business.

¶ These features of the paper are universally known in the metal trades and it is universally recognized in the iron, steel, machinery, foundry and metal working fields that the descriptive matter of THE IRON AGE has an individuality and a value that command the attention of every executive to whom the paper is sent.

¶ Many millions of dollars worth of contracts are placed each year subject to THE IRON AGE quotations; obviously buyer and seller are equally interested in its current markets.

¶ In practically every important plant in the metal industries THE IRON AGE passes regularly through the hands of the officials of the company, the head of the firm, the general manager, the purchasing agent, the shop superintendent.

¶ Many concerns have a printed slip pasted on the front cover of THE IRON AGE showing the names of the various department heads to whom the particular copy is directed, and each man is required to place a check mark after his name in order to show that the articles and news to which his attention was directed have been read.

¶ The man who must give his personal attention to the more important affairs of his business particularly needs THE IRON AGE to point out ways that lead to greater efficiency and economy. It is to the highest interest of a business of this size that the man who directs it knows what is being paid in every part of the country for the metals he uses.

¶ Assuming that he buys his castings, he should know what the foundry is paying for the grade of pig iron used; the current prices for sheets, bars and wire,—all finished iron and steel—and for copper, tin and other non-ferrous metals should have his careful attention.

¶ When the material is bought at the right price, known by careful study of the markets, it is equally important to follow closely the news of outlets for the finished product.

¶ Suppose the concern is a manufacturer of machinery. It is a certainty that the man at the head of it or the man in charge of the selling department and the dealer who handles his products must keep in touch with THE IRON AGE machinery markets.

¶ Be it noted that the machinery market is of value not alone to the machinery man. The fact that certain railroads have issued machine tools lists should be of interest to other manufacturers than the builders of machinery. It is safe to believe that if a railroad purchasing office is buying machinery other lines of metal products are also in demand.

¶ The man who sells shop lighting fixtures or foundry supplies, or the manufacturer of wrenches, hammers, chain hoists, bolts, nuts or screw machine products, will find profits direct and measurable in following the business tips published each week in THE IRON AGE'S news columns.

¶ In nearly every important manufacturing center in the United States you will find a man specially trained to gather industrial news, who follows up every new incorporation so that the readers of THE IRON AGE may have definite information as to what the company will manufacture and what it will buy.

¶ These items and the weekly machinery markets should be followed closely because they make it possible to build up a mailing list that no money can buy ready to hand.

¶ THE IRON AGE spends more money in gathering live market news than any other publication in the world; naturally it desires that its readers use this material to the best purpose. Just here is a good place to say that THE IRON AGE spends not less than a thousand dollars every week to gather editorial material.

¶ Thousands of large, active manufacturers in the United States are adding to their list of prospects and to their list of customers by an intelligent and systematic following of the information in THE IRON AGE concerning new incorporations.

¶ This single feature makes the paper indispensable to every concern active and alert in building up new business.

¶ In buying raw material, machinery or supplies, the reader will find that THE IRON AGE'S advertisers make up a magnificent buying directory,—a list naturally composed of reliable, representative, up-to-date and responsible firms—ready to quote and ready to accept business. So the advertising pages in THE IRON AGE vie in importance with its reading pages.

¶ The man who aims to do business on modern and progressive lines is bound to read what is being advertised in his field. In no other way can he learn so well what his competitors are doing or whether his plant has the best equipment for his purpose.

¶ Every reader of this paper receives a definite value far above the subscription price, as none know so well as those who, week in and week out, use THE IRON AGE in the way just told.

Current Metal Prices.

The following quotations are for small lots. New York. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly report.

IRON AND STEEL— Bar Iron from Store—		Genuine Iron Sheets— Galvanized		METALS— Tin—	
Refined Iron:		Nos. 22 and 24.....@ lb 5.50¢		Straits Pig@ lb 47¢ @ 48¢	
1 to 1½ in. round and square.....@ lb 1.70¢		No. 26@ lb 6.00¢		Copper—	
1½ to 4 in. x ½ to 1 in.....@ lb 1.80¢		No. 28@ lb 7.00¢		Lake Ingot@ lb 15¢ @ 16¢	
Rods—½ and 11-16 round and square.....@ lb 1.80¢		Corrugated Roofing—		Electrolytic@ lb 15¢ @ 16¢	
Angles:		2½ in. corrugated. Painted. Galvd.		Casting@ lb 15¢ @ 16¢	
3 in. x ¾ in. and larger.....@ lb 1.80¢		No. 24@ 100 sq. ft. \$3.75 \$4.70		Spelter—	
3 in. x 3-16 in. and ½ in.....@ lb 2.20¢		No. 26@ 100 sq. ft. 2.85 3.90		Western@ lb 7¢ @ 7½¢	
1½ to 2½ in. x ¾ in.....@ lb 1.95¢		No. 28@ 100 sq. ft. 2.50 3.65		Zinc—	
1 to 1½ in. x 2-16 in.....@ lb 1.95¢		Tin Plates—		No. 0, base, casks.....@ lb 8½¢. Open, @ lb 9½¢	
1 to 1½ x ½ in.....@ lb 2.00¢		American Charcoal Plates (Per Box)		Lead—	
¾ x ½ in.....@ lb 2.10¢		AAA Charcoal:		American Pig@ lb 5¼¢ @ 5½¢	
¾ x ¾ in.....@ lb 2.15¢		IC, 14 x 20.....@ \$6.35		Solder—	
¾ in. x ¾ in.....@ lb 3.35¢		IX, 14 x 20.....@ 7.00		¾ & ½ guaranteed.....@ lb 27¼¢ @ 28¢	
¾ x 3-32 in.....@ lb 4.40¢		A Charcoal:		No. 1@ lb 25¼¢ @ 26¢	
Tees:		IC, 14 x 20.....@ \$5.30		Refined@ lb 23¢ @ 24¢	
1 in.@ lb 2.25¢		IX, 14 x 20.....@ 5.40		Prices of Solder indicated by private brand vary according to composition.	
1½ in.@ lb 2.10¢		American Coke Plates—Bessemer—		Antimony—	
1½ to 2½ x ¾ in.....@ lb 1.80¢		IC, 14 x 20.....@ \$4.20		Cookson@ lb 10¼¢ @ 10½¢	
1½ to 2½ x 3-16 in.....@ lb 2.00¢		IX, 14 x 20.....@ 5.20		Halletts@ lb 10¼¢ @ 10½¢	
3 in. and larger.....@ lb 1.85¢		American Terne Plates—		Other Brands@ lb 6¼¢ @ 6½¢	
Beams@ lb 1.80¢		IC, 20 x 28 with an 8 lb coating.....@ \$8.10		Bismuth—	
Channels, 3 in. and larger.....@ lb 1.80¢		IX, 20 x 28 with an 8 lb coating.....@ 10.10		Per lb@ \$2.00 @ \$2.25	
Bands—1½ to 6 x 6-16 to No. 8.....@ lb 2.00¢		Seamless Brass Tubes—		Aluminum—	
Burden's "H. B. & S." Iron, base price.....@ 3.15¢		List November 13, 1908.....Base price, 18¢		No. 1 Aluminum (guaranteed over 99% pure), in ingots for remelting (ton lots).....@ \$19.00 @ \$20.00	
"Burden's Best" Iron, base price.....@ 3.15¢		Brass Tubes, Iron Pipe Sizes—		Rods & WireBase Price 21¢	
Norway Bars@ lb 3.00¢		List November 13, 1908.....Base price, 18¢		SheetsBase Price 24¢	
Merchant Steel from Store—		Copper Tubes—		Old Metals—	
Bessemer Machinery@ lb 1.70¢		List November 13, 1908.....Base price, 21¢		Dealers' Purchasing Prices Paid in New York	
Toe Calk, Tire and Sleigh Shoe.....@ 2.50 @ 3.00¢		Brazed Brass Tubes—		Copper, heavy and crucible.....@ 12.50	
Best Cast Steel, base price in small lots.....@ 7¢		List February 1, 1911. 20% @ lb		Copper, heavy and wire.....@ 12.50	
Sheets from Store—		High Brass Rods—		Copper, light and bottoms.....@ 11.00	
Black		List February 1, 1911. 15% @ lb		Brass, heavy@ 8.50	
One Pass, C.R. R.G. Soft Steel. Cleaned		Roll and Sheet Brass—		Brass, light@ 8.50	
No. 16@ lb 2.40¢ @ 2.95¢		List February 1, 1911. 16% @ lb		Heavy machine composition.....@ 10.00	
Nos. 18 to 20.....@ lb 2.45¢ @ 3.05¢		Brass Wire—		Clean brass turnings.....@ 8.00	
Nos. 22 and 24.....@ lb 2.50¢ @ 3.15¢		List February 1, 1911. 15% @ lb		Composition turnings.....@ 8.00	
No. 26@ lb 2.55¢ @ 3.25¢		Copper Wire—		Lead, heavy@ 7.00	
No. 28@ lb 2.65¢ @ 3.45¢		Base Price, Carload lots mill 15¼¢		Lead, tea@ 7.00	
Russia, Plainished, &c.		Copper Sheets—		Zinc, scrap@ 1.00	
Genuine Russia, according to assortment		Sheet Copper Hot Rolled, 16 oz. (quantity lots).....@ lb 19¢			
Patent Plainished, W. Dewees		Sheet Copper Cold Rolled, 1¢ @ lb advance over Hot Rolled.			
Wood@ lb A. 10¢; B. 9¢ net		Sheet Copper Polished 20 in. wide and under, 1¢ @ square foot.			
Galvanized		Sheet Copper Polished over 20 in. wide, 2¢ @ square foot.			
Nos. 12 and 14.....@ lb 2.75¢		Plainished Copper, 1¢ @ square foot more than Polished.			
No. 24@ lb 3.10¢		Tinning, one side, 3¼¢ @ square foot.			
No. 26@ lb 3.30¢					
No. 28@ lb 3.60¢					
No. 20 and lighter 36 inches wide, 25¢ higher.					

Nicholson Files and Rasps



Nearly half a century ago Nicholson Files established a reputation for exceptionally keen bite and long life. Users began to insist on the files that bore "Nicholson" on the tang.

Today Nicholson Files are always specified by men who consider efficiency and economy of paramount importance. That's because the reputation established nearly half a century ago has been and will be maintained by every "Nicholson" File that leaves our hands.

Nicholson File Co., Providence, R.I., U.S.A.

